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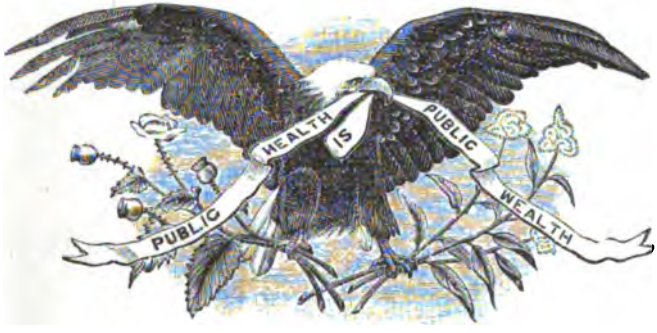

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SANITARY TOPOGRAPHY, CLIMATE, AND MINERAL SPRINGS OF PENNSYLVANIA.

By A. N. Bell, A.M., M.D.

Few States in the Union present a more varied surface or greater varieties of climate, though upon the whole healthful, than Pennsylvania. It comprises an area, including the water surfaces of portions of Lake Erie and Delaware Bay, which pertain to it, of 46,000 square miles—the land area being 45,086 square miles. It lies between the parallels of 39° 43′ and 42° 15′ north latitude—the latter parallel being the northern limit to the western boundary of New York, where it takes in a small tract of Lake Erie coast—and the meridians of 74° 43′ 36″ and 80° 31′ 36″ west longitude from Greenwich. Its greatest length from east to west is 302.34 miles, and its greatest breadth from north to south, 175.6 miles; mean length, 280.39 miles, and mean breadth, 158.05 miles. From its place among the thirteen original States it was called the Keystone State.

The surface is hilly and mountainous in the centre, rolling in the west and generally level in the eastern and southern portions. Several parallel ridges of the Appalachian Mountains, with a maximum height of 2500 feet, cross it from northeast to southwest, covering altogether about one fourth of the entire area of the State. Next west of South Mountain, on the Delaware, below Easton, is the Kittatinny or Blue Mountains; then the Broad Mountains, south of the northern branch of the Susquehanna; the Tuscarora, west of the Susquehanna; the Sidling hills, south of the Juniata; the Alle-

ghany Mountains; the Chestnut and Laurel Hill ridges. The entire breadth of the mountainous region of the State is about 200 miles. Numerous beautiful and fertile valleys intervene, and among them some of the richest coal fields and iron mines in the Union. The valleys generally conform to the trend of the mountains; the rivers mostly follow the same lines, but some of them traverse the valleys obliquely. The Delaware enters the State about latitude 42°, and continues from that point throughout its course to Marcus Hook, as the boundary between Pennsylvania and New Jersey. This river was named after Lord de la Warr, who visited the Bay in 1610. Its length is 300 miles. At the Water Gap it breaks through a narrow gorge, whose sides rise perpendicularly to near 1200 feet, and presents a truly grand spectacle. At Easton it receives the Lehigh, a beautiful, rapid and romantic stream, 90 miles long, which takes its rise in the coal region. The Lehigh Water Gap, below Mauch Chunk, is also a very picturesque place, and the region round about charming. Mauch Chunk, Allentown, and Bethlehem are on the Lehigh. The Delaware, with a fall of about 160 feet, reaches tide-water at Trenton; 35 miles further southwest passes Philadelphia, and just below that city receives the Schuylkill, a stream 120 miles long, rising in the coal regions, which passes Pottsville, Reading, Norristown, and Manayunk. Chester, New Castle, and Delaware City are below Philadelphia.

The chief river of the State, however, is the Susquehanna, though its northeastern branch rises in New York. Besides this branch it consists of the western branch and the Juniata, and drains about 22,000 square miles. The northeastern branch, after flowing 250 miles from its rise in Otsego Lake and receiving the Chemung or Tioga and the Lackawanna through the beautiful Wyoming Valley, unites below Northumberland with the western branch, 175 miles long from its rise in Cambria County, pursues its course until it receives the Juniata, 150 miles long from its rise in the slopes of the Alleghany Mountains, and then turning southeast empties, after an entire course of 500 miles, into Chesapeake Bay. The Susquehanna and its tributaries, which pass through the most fertile and the richest regions of the State, display scenery in their course justly famed for great picturesqueness, beauty,

and healthfulness. West of the Alleghany Mountains there are two great rivers with many tributaries, the Alleghany and Monongahela. The former rises in Potter County, flows 50 miles northwest in New York, and turning southwest, re-enters Pennsylvania in Warren County, receives the Clarion River, Red Bank Creek, and the Conemaugh on the left, and French Conewango creeks on the right, all important streams. The Alleghany from this point, where it re-enters the State, to that of its junction with the Monongahela at Pittsburg, is 180 miles long. The Monongahela is formed by two branches, the Monongahela proper and the Cheat River, both of which rise and flow in Virginia for 100 miles, thence into Fayette County, Pa., where they unite to form the Monongahela, which then flows northerly 80 miles. At McKeesport it receives the Youghiogheny from the southeast, about 100 miles long, flows northerly 18 miles to Pittsburg, where it meets the Alleghany from the north, and both are lost by confluence in the origination of the Ohio.

The Ohio flows 25 miles northwest and swallows up the Big Beaver, which is the recipient of several tributaries that together drain an area of about 6000 square miles, and then, turning southwest, leaves the State in Beaver County.

The rivers mostly break through the mountain chains, and thus give access to the inexhaustible mineral and agricultural wealth of the State.

There are no lakes of consequence in the State, but it forms 45 miles of the shore of Lake Erie, and has an excellent harbor at Erie.

The climate differs primarily with the difference in the three natural divisions of surface of the State already stated, the records of which may be classified into three sections : eastern and southeastern, central, and northern and northwestern.

The eastern section particularly is marked by irregular alternations of the seasons, the mean extremities of notation for a great number of years being 5° below zero and 100° F.; there are rarely more than thirty days of summer heat above 80°, or of winter below 30°. Sudden changes are of frequent occurrence, but the periods of intensity, hot or cold weather, seldom last more than three days at a time. The period from the middle of January to that of February is generally the

coldest, and from the beginning of July to the middle of August, the hottest.

In the central section the fluctuations are more abrupt and the extremes greater.

In the northern and northwestern—the mountainous regions—the winters are very severe, with a winter extreme as low as 20° below zero. The summers are delightfully cool.

The mean annual temperature, as recorded for a series of years in the southeastern section, is 52°. It decreases to 48° in the central section, and to 44° in the northern and northwestern. Recorded observations, selected with special reference to the different sections, as far as practicable, are as follows:

METEOROLOGICAL DATA.	Erie. Lat. 42° 07′; long. 80° 10′; elevation, 671.5 ft.	Pittsburg. Lat. 40° 32′; long. 80° 02′; elevation, 701 ft.	Newcastle. Lat. 41° 1′; long. 80° 21′; elevation not stated.	Cannonsburg. Lat. 40° 17′; long. 80° 12′, elevation not stated.	Franklin. Lat. 41° 23′; long. 79° 50′; elevation not stated.	Tioga. Lat. 41° 48′; long. 78° 10′; elevation not stated.	Mount Joy. Lat. 40° 11′; long. 77° 22′; elevation not stated.	Lewisburg. Lat. 40° 57′; long. 77° 58′; elevation not stated.	Harrisburg. Lat. 40° 15′; long. 77° 56′; elevation not stated.	Philadelphia. Lat. 39° 57′; long. 75° 10′; elevation, 71.12 ft.
Temperature:	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
Mean annual	49 02	52 6	49 3	50 1	47 1	44 4	52 3	48 4	53 3	52 5
Highest of year	96 ..	99 5	89 ..	93 ..	92 ..	106 ..	103 ..	98 ..	98 ..	97 ..
Lowest of year	8 ..	10 ..	4 ..	6 ..	0 ..	20 ..	1 ..	2 ..	13 ..	10 5
Annual range	88 ..	89 ..	87 ..	85 ..	92 .	126 ..	102 ..	96 ..	83 ..	86 5
Mean spring	42 7	40 3	46 7	47 7	43 6	41 7	50 6	46 7	49 1	47 5
Highest "	81 ..	.....	81 ..	84 ..	86 ..	80 ..	86 ..	85 ..	87 ..	87 5
Lowest "	11 ..	.....	2 ..	6 ..	7 ..	20 ..	5 ..	6 ..	13 ..	19 ..
Range "	70 ..	.....	79 ..	78 ..	79 ..	100 ..	81 ..	79 ..	76 ..	68 5
Mean summer	71 2	73 ..	70 9	70 2	67 5	64 4	72 9	69 7	74 7	72 9
Highest "	96 ..	99 5	89 ..	93 ..	92 ..	103 ..	103 ..	98 ..	96 .	97 ..
Lowest "	50 ..	50 ..	39 ..	44 ..	39 ..	30 ..	42 ..	40 ..	45 ..	51 ..
Range "	46 ..	49 5	50 ..	49 ..	53 ..	76 ..	61 ..	58 ..	51 ..	46 ..
Mean autumn	51 5	53 6	47 .	47 6	46 4	46 5	51 5	47 5	53 1	53 7
Highest "	87 ..	97 ..	81 ..	88 ..	86 ..	84 ..	87 ..	85 ..	85 ..	90 ..
Lowest "	20 .	18 ..	15 ..	16 ..	10 ..	10 ..	1 ..	21 ..	30 ..	20 5
Range "	67 ..	79	66 ..	72 ..	76 ..	74 ..	86 ..	64 ..	55 ..	69 5
Mean winter	31 6	35 7	32 7	34 8	30 9	25 1	34 ..	29 8	35 1	36 1
Highest "	70 ..	69 ..	60 ..	68 ..	64 ..	54 ..	64 ..	48 ..	59 .	75 ..
Lowest "	8 ..	10 ..	4 ..	6 ..	0 ..	12 ..	10 ..	2 ..	18 ..	10 5
Range "	62 ..	59 ..	56 ..	62 ..	64 ..	66 ..	54 ..	46 ..	41 .	64 5
Rainfall:	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
Mean annual	45.65	44.26	43.91	37.96	50.86	40.54	30.33	38.63	44.51	49.32
spring	4.55	12.51	10.17	10.43	11.10	11.41	5.65	10.14	10.48	14.67
summer	12.78	11.50	10.67	8.48	11.34	7.38	7.48	10.83	10.93	9.92
autumn	13.88	10.49	8.29	10.04	16.68	14.85	11.80	10.69	8.40	16.31
winter	14.44	9.76	14.78	9.01	11.74	6.90	5.40	6.97	14.70	8.42

Barring the swampy regions of the eastern section, a few of the river valleys and along the canals, the climate is on the whole salubrious, and the mountainous regions comprise many commendable summer resorts for invalids.

The mineral springs are as follows:

Bedford Springs, Bedford, Bedford County.
Magnesia Iron Spring. F. A. Genth, analyst.

Calcareous.

Calcium carbonate,	grains	per gallon	8.47
Magnesium carbonate,	"	"	0.59
Manganese carbonate,			trace.
Iron carbonate,	"	"	0.05
Sodium sulphate,	"	"	0.61
Calcium sulphate,	"	"	73.08
Potassium sulphate,	"	"	0.30
Strontium sulphate,	"	"	0.01
Magnesium sulphate,	"	"	38.68
Calcium phosphate,	"	"	0.02
Sodium chloride,	"	"	0.53
Lithium chloride,			trace.
Silica,	"	"	0.17
Hydrosulphuric acid,	"	"	0.01
Carbonic acid,	"	"	1.27
Total	"	"	141.17

Sulphur Spring. F. A. Genth, analyst.

Calcareous.

Calcium carbonate,	grains	per gallon	10.21
Magnesium carbonate,	"	"	1.00
Manganese carbonate,			trace.
Iron carbonate,	"	"	0.08
Sodium sulphate,	"	"	0.51
Calcium sulphate,	"	"	73.08
Potassium sulphate,	"	"	0.41
Magnesium sulphate,	"	"	33.40
Calcium phosphate,	"	"	0.02
Sodium chloride,	"	"	0.37
Lithium chloride,			trace.
Silica,	"	"	0.54
Hydrosulphuric acid,	"	"	0.08
Carbonic acid,	"	"	2.79
Total	"	"	122.49

Magnesia Spring. F. A. Genth, analyst.

Calcareous.

Calcium carbonate, grains per gallon	10.43
Magnesium carbonate, " "	0.94
Manganese carbonate,	trace.
Iron carbonate, " "	0.04
Sodium sulphate, " "	0.33
Calcium sulphate, " "	99.83
Potassium sulphate, " "	0.18
Strontium sulphate, " "	0.13
Magnesium sulphate, " "	39.62
Barium sulphate,	trace.
Calcium phosphate, " "	0.01
Sodium chloride, " "	0.46
Lithium chloride,	trace.
Silica, " "	0.77
Hydrosulphuric acid,	trace.
Carbonic acid, " "	0.56
Total " "	153.30

Large Limestone Spring. F. A. Genth, analyst.

Indifferent, Acidulated.

Calcium carbonate, grains per gallon	7.09
Magnesium carbonate, " "	1.88
Manganese carbonate,	trace.
Iron carbonate, " "	0.04
Calcium sulphate, " "	0.58
Potassium sulphate, " "	0.27
Strontium sulphate, " "	0.08
Magnesium sulphate, " "	0.29
Calcium phosphate,	trace.
Sodium chloride, " "	0.23
Potassium chloride,	trace.
Silica, " "	0.47
Hydrosulphuric acid,	trace.
Carbonic acid, " "	3.77
Total " "	14.70

Sweet Spring. F. A. Genth, analyst.

Indifferent.

Calcium carbonate, grains per gallon	0.52
Magnesium carbonate, " "	0.14
Silica, " "	0.65
Carbonic acid, " "	0.31
Total " "	1.62

Chalybeate Spring. F. A. Genth, analyst.

Indifferent, Acidulated.

Sodium carbonate, grains per gallon	0.40
Potassium carbonate, " "	0.13
Calcium carbonate, " "	8.85
Magnesium carbonate, " "	1.20
Manganese carbonate,	trace.
Iron carbonate, " "	0.44
Calcium sulphate, " "	2.74
Calcium phosphate, " "	0.03
Sodium chloride, " "	0.12
Silica, " "	0.79
Hydrosulphuric acid,	trace.
Carbonic acid (free), " "	5.60
Total " "	20.30

Anderson Spring. Dr. Church, analyst.

Chalybeate, Saline.

Calcium carbonate, grains per gallon	8.00
Iron carbonate, " "	5.00
Calcium sulphate, " "	15.00
Magnesium sulphate, " "	80.00
Sodium chloride, " "	10.00
Calcium chloride, " "	3.00
Loss, " "	3.00
Total " "	124.00

Hafer's Chalybeate Spring, one mile northeast of Bedford, Bedford County. F. A. Genth, analyst.

Indifferent.

Sodium carbonate,	grains	per gallon	0.75
Potassium carbonate,	"	"	0.25
Calcium carbonate,	"	"	11.34
Magnesium carbonate,	"	"	2.52
Manganese carbonate,	"	"	0.02
Iron carbonate,	"	"	0.36
Calcium sulphate,	"	"	4.40
Calcium phosphate,	"	"	0.03
Sodium chloride,	"	"	0.18
Lithium chloride,			trace.
Silica,	"	"	0.86
Total	"	"	20.71

Black Barren Spring, Pleasant Grove, Lancaster County. Rand and Cressen, analysts.

Indifferent.

Sodium sulphate,	grains	per gallon	1.21
Magnesium sulphate,	"	"	3.24
Silica,	"	"	1.30
Total	"	"	5.75

McVitty's Spring, near Saltillo, Huntingdon County. F. A. Genth, analyst.

Calcareous.

Calcium bicarbonate,	grains	per gallon	9.84
Magnesium bicarbonate,	"	"	1.87
Iron bicarbonate,	"	"	0.14
Sodium sulphate,	"	"	0.01
Potassium sulphate,	"	"	0.16
Sodium chloride,	"	"	0.06
Silica,	"	"	0.59
Magnesium sulphate,			trace.
Hydrosulphuric acid,	"	"	0.02
Total	"	"	13.69

Fayette Spring, Fayette Springs, Fayette County. F. A. Genth, analyst.

Chalybeate.

Calcium bicarbonate,	grains	per gallon	9.33
Magnesium bicarbonate,	"	"	1.53
Manganese bicarbonate,	"	"	0.05
Iron bicarbonate,	"	"	1.07
Sodium sulphate,	"	"	0.20
Calcium sulphate,	"	"	0.06
Potassium sulphate,	"	"	0.11
Magnesium sulphate,	"	"	0.25
Calcium phosphate,	"	"	0.05
Sodium chloride,	"	"	0.09
Alumina,			trace.
Silica,	"	"	1.20
Carbonic acid (free),	"	"	0.38
Nitrous acid,			trace.
Total	"	"	14.32

Cresson Springs, Cresson, Cambria County.
Iron Spring. F. A. Genth, analyst.

Chalybeate.

Calcium bicarbonate,	grains	per gallon	3.53
Iron bicarbonate,	"	"	5.04
Sodium sulphate,	"	"	1.64
Calcium sulphate,	"	"	48.92
Potassium sulphate,	"	"	0.32
Lithium sulphate,			trace.
Magnesium sulphate,	"	"	22.58
Aluminium sulphate,	"	"	1.60
Iron sulphate,	"	"	23.48
Iron persulphate,			trace.
Calcium phosphate,	"	"	0.03
Sodium chloride,	"	"	0.04
Silica,	"	"	1.21
Total	"	"	108.39

Alum Spring. F. A. Genth, analyst.

Chalybeate, Alum.

Iron bicarbonate,	grains per gallon	.....	3.75
Manganese bicarbonate,		.....	trace.
Sodium sulphate,	"	.....	0.70
Calcium sulphate,	"	.....	40.20
Potassium sulphate,	"	.....	0.43
Lithium sulphate,	"	.....	0.05
Magnesium sulphate,	"	.....	27.70
Aluminium sulphate,	"	.....	21.20
Iron sulphate,	"	.....	16.25
Iron persulphate,	"	.....	33.39
Calcium phosphate,		.....	trace.
Sodium chloride,	"	.....	0.02
Silica,	"	.....	1.87
Total	"	.....	145.56

Magnesia Spring. F. A. Genth, analyst.

Indifferent.

Sodium bicarbonate,	grains per gallon	.....	1.43
Potassium bicarbonate,	"	.....	0.21
Calcium bicarbonate,	"	.....	0.02
Magnesium bicarbonate,	"	.....	0.41
Manganese bicarbonate,		.....	trace.
Iron bicarbonate,	"	.....	0.02
Calcium sulphate,	"	.....	0.11
Calcium phosphate,		.....	trace.
Sodium chloride,	"	.....	1.23
Calcium chloride,	"	.....	1.30
Magnesium chloride,	"	.....	0.56
Alumina,	"	.....	0.01
Silica,	"	.....	0.92
Carbonic acid (free),	"	.....	0.66
Nitrous acid,		.....	trace.
Total	"	.....	6.88

Gettysburg Mineral Springs, Gettysburg, Adams County.
Katalysine Springs. No. 1. A. M. Mayer, analyst.

Alkaline.

Sodium carbonate,	grains	per gallon	46.05
Calcium bicarbonate,	"	"	81.00
Magnesium bicarbonate,	"	"	76.05
Calcium sulphate,	"	"	53.20
Silicic oxide,	"	"	10.00
Iron bicarbonate, potassium bicarbonate, calcium phosphate, sodium chloride, lithium chloride, magnesium bromide			traces.
Total grains per gallon			266.30

No. 2. F. A. Genth, analyst.

Indifferent.

Calcium carbonate,	grains	per gallon	16.41
Sodium bicarbonate,	"	"	0.70
Magnesium bicarbonate,	"	"	0.54
Manganese,	"	"	0.01
Iron bicarbonate,	"	"	0.04
Magnesium borate,	"	"	0.03
Sodium sulphate,	"	"	0.47
Calcium sulphate,	"	"	0.83
Potassium sulphate,	"	"	0.21
Magnesium sulphate,	"	"	0.78
Calcium phosphate,	"	"	0.01
Sodium chloride,	"	"	0.66
Calcium fluoride,	"	"	0.01
Silica oxide,	"	"	2.03
Organic matter,	"	"	0.71
Impurities,	"	"	1.10
Nickel bicarbonate, cobalt bicarbonate, copper bicarbonate, strontium bicarbonate, barium sulphate, lithium chloride, alumina			traces.
Total grains per gallon			26.54

Gettysburg Lithia Springs.

No. 1. F. A. Genth, analyst.

Alkaline.

Sodium bicarbonate,	grains	per gallon	3.20
Calcium bicarbonate,	"	"	10.71
Magnesium bicarbonate,	"	"	5.31
Iron bicarbonate,	"	"	0.03
Calcium sulphate,	"	"	0.48
Potassium sulphate,	"	"	0.15
Magnesium sulphate,	"	"	3.30
Sodium chloride,	"	"	0.28
Silicic oxide,	"	"	1.78
Total	"	"	25.24

No. 2. O. Oldsburg, analyst.

Alkaline.

Sodium bicarbonate,	grains	per gallon	4.97
Calcium bicarbonate,	"	"	8.00
Magnesium bicarbonate,	"	"	7.31
Iron bicarbonate,	"	"	0.05
Sodium sulphate,	"	"	0.20
Calcium sulphate,	"	"	0.25
Potassium chloride,	"	"	0.11
Silicic oxide,	"	"	0.17
Lithia,			trace.
Total	"	"	21.06

No. 3. F. A. Genth, analyst.

Alkaline.

Sodium bicarbonate,	grains	per gallon	3.38
Calcium bicarbonate,	"	"	9.96
Magnesium bicarbonate,	"	"	5.83
Iron bicarbonate,	"	"	0.04
Calcium sulphate,	"	"	0.48
Potassium sulphate,	"	"	0.15
Magnesium sulphate,	"	"	3.30

Calcium phosphate,	grains	per gallon	0.01
Sodium chloride,	"	"	0.32
Alumina,	"	"	0.02
Silica,	"	"	1.76
Manganese carbonate, lithium chloride			traces.
Total grains per gallon			25.25

East Clarion Spring, Elk County. F. A. Genth, analyst.

Saline.

Calcium bicarbonate,	grains	per gallon	9.80
Magnesium bicarbonate,	"	"	0.58
Iron bicarbonate,	"	"	0.72
Barium bicarbonate,	"	"	0.13
Ammonium nitrate,	"	"	0.19
Magnesium nitrate,	"	"	0.14
Sodium chloride,	"	"	336.80
Calcium chloride,	"	"	51.86
Potassium chloride,	"	"	0.90
Strontium chloride,	"	"	0.06
Magnesium chloride,	"	"	15.34
Barium chloride,	"	"	1.72
Silica,	"	"	0.70
Strontium bicarbonate, calcium phosphate, lithium chloride			traces.
Total grains per gallon			418.94

Hanover Mineral Spring, York County. Professor Hollenbush, analyst.

Chalybeate.

Calcium carbonate,	grains	per gallon	0.29
Magnesium sulphate,	"	"	0.42
Magnesium protoxide,	"	"	0.21
Iron protoxide,	"	"	1.84
Alumina,	"	"	0.16
Total	"	"	2.92

Kane Geyser Well (2000 feet), near Sargent, McKean County. F. A. Genth, analyst.

Saline.

Calcium carbonate,	grains	per gallon	4.14
Magnesium carbonate,	"	"	0.36
Iron carbonate,	"	"	7.77
Calcium sulphate,	"	"	35.40
Calcium phosphate,	"	"	0.07
Sodium chloride,	"	"	6455.87
Calcium chloride,	"	"	2871.32
Potassium chloride,	"	"	2.63
Magnesium chloride,	"	"	555.95
Iron chloride,	"	"	2.49
Lithium chloride,	"	"	2.66
Magnesium bromide,	"	"	76.94
Magnesium iodide,	"	"	0.88
Silica,	"	"	0.47
Total	"	"	10016.94

Kane Sulphur Spring, 2½ miles northwest of Kane, McKean County. F. A. Genth, analyst.

Indifferent.

Sodium carbonate,	grains	per gallon	1.44
Potassium carbonate,	"	"	0.46
Calcium carbonate,	"	"	4.78
Magnesium carbonate,	"	"	0.85
Manganese carbonate,	"	"	0.02
Iron carbonate,	"	"	0.10
Calcium sulphate,	"	"	0.07
Calcium phosphate,	"	"	0.01
Sodium chloride,	"	"	0.77
Alumina,	"	"	0.03
Silica,	"	"	0.60
Carbonic acid,	"	"	3.19
Nickel carbonate, manganese bicarbonate, lithium chloride, hydrosulphuric acid			traces.
Total grains per gallon			12.32

Reed and Lyon White Sulphur Spring, Milligan's Cove, in Harrison Township, near Bedford Springs, Bedford County. F. A. Genth, analyst.

Indifferent.

Sodium carbonate, grains per gallon	0.54
Calcium carbonate, " "	5.58
Magnesium carbonate, " "	1.29
Iron carbonate, " "	0.43
Sodium sulphate, " "	1.01
Calcium sulphate, " "	0.36
Potassium sulphate, " "	0.22
Magnesium sulphate, " "	0.98
Sodium chloride, " "	1.19
Silica, " "	1.81
Hydrosulphuric acid, " "	0.06
Carbonic acid, " "	1.29
Calcium phosphate, lithium chloride	traces.
Total grains per gallon	13.76

Minnequa Springs, near Minnequa, Bradford County. F. A. Genth, analyst.

No. 1. *Calcareous.*

Sodium bicarbonate, grains per gallon	1.33
Potassium bicarbonate, " "	0.14
Calcium bicarbonate, " "	6.53
Magnesium bicarbonate, " "	1.59
Manganese bicarbonate, " "	0.06
Zinc bicarbonate, " "	0.01
Iron bicarbonate, " "	0.04
Barium bicarbonate, " "	0.01
Magnesium bicarbonate, " "	0.08
Calcium phosphate, " "	0.01
Sodium chloride, " "	0.19
Silica, " "	0.75
Hydrosulphuric acid, " "	0.01
Iron carbonate, barium sulphate, lithium chloride, alumina	traces.
Total grains per gallon	10.75

No. 2. *Chalybeate.*

Sodium carbonate,	grains	per gallon	1.09
Calcium carbonate,	"	"	0.73
Magnesium carbonate,	"	"	1.27
Calcium sulphate,	"	"	0.49
Sodium chloride,	"	"	1.03
Iron protoxide,	"	"	3.70
Sulphur,	"	"	1.34
Organic matter,	"	"	0.74
Potassium chloride,			trace.
Total	"	"	10.39

Sulphur Spring, Ander's Run, 2½ miles southwest of Ironton, Warren County. F. A. Genth, analyst.

Alkaline.

Sodium carbonate,	grains	per gallon	7.49
Potassium carbonate,	"	"	0.51
Calcium carbonate,	"	"	4.75
Magnesium carbonate,	"	"	2.47
Iron carbonate,	"	"	0.18
Calcium sulphate,	"	"	0.61
Sodium chloride,	"	"	0.98
Silica,	"	"	0.61
Carbonic acid,	"	"	6.60
Total,	"	"	24.20

Guylyck and Gaylord's Spring, Blossburg, Tioga County. S. A. Lattimore, analyst.

Acid, Chalybeate.

Sodium sulphate,	grains	per gallon	0 25
Calcium sulphate,	"	"	17 91
Aluminium sulphate,	"	"	0.55
Magnesium sulphate,	"	"	15.55
Iron sulphate,	"	"	73.06
Silica,	"	"	0.56
Sulphuric acid,	"	"	3.10

Blossburg Springs, Blossburg, Tioga County. F. A. Genth, analyst.

Acid, Chalybeate.

Sodium sulphate,	grains per gallon	.....	0.27
Calcium sulphate,	" "	.....	23.13
Aluminium sulphate,	" "	.....	6.58
Potassium sulphate,	" "	.....	0.24
Lithium sulphate,	" "	.....	0.12
Magnesium sulphate,	" "	.....	13.10
Manganese sulphate,	" "	.....	1.83
Nickel sulphate,	" "	.....	0.36
Cobalt sulphate,	" "	.....	0.03
Iron persulphate,	" "	.....	31.32
Iron phosphate,	" "	.....	0.33
Sodium chloride,	" "	.....	0.10
Silica,	" "	.....	2.15
Sulphuric acid,	" "	.....	5.64
Total	" "	.....	85.20

Kittanning Mineral Spring, Kittanning, Armstrong County. F. A. Genth, analyst.

Calcareous, Chalybeate.

Calcium bicarbonate,	grains per gallon	.....	16.05
Manganese bicarbonate,	" "	.....	0 25
Sodium sulphate,	" "	.....	8.73
Calcium sulphate,	" "	.....	65.12
Aluminium sulphate,	" "	.....	1.53
Potassium sulphate,	" "	.....	0.91
Magnesium sulphate,	" "	.....	26.85
Iron sulphate,	" "	.....	24.49
Calcium phosphate,	" "	.....	0.11
Sodium chloride,	" "	.....	0.65
Silica,	" "	.....	1.17
Total	" "	.....	145.86

May's Springs (2), Milligan's Cove, Harrison Township, Bedford County. F. A. Genth, analyst.

Calcareous.

Calcium carbonate,	grains	per gallon	6.67
Magnesium carbonate,	"	"	1.18
Iron carbonate,	"	"	0.06
Sodium sulphate,	"	"	1.31
Calcium sulphate,	"	"	4.55
Potassium sulphate,	"	"	0.44
Magnesium sulphate,	"	"	2.25
Calcium phosphate,	"	"	0.05
Sodium chloride,	"	"	0.46
Silica,	"	"	0.83
Lithium chloride,			trace.
Carbonic acid,	"	"	5.46
Total	"	"	23.36

McCarthy's or Saltillo Mineral Springs, near Saltillo, Huntingdon County. F. A. Genth, analyst.

Calcareous.

Calcium bicarbonate,	grains	per gallon	22.24
Magnesium bicarbonate,	"	"	0.88
Iron bicarbonate,	"	"	0.08
Sodium sulphate,	"	"	7.79
Calcium sulphate,	"	"	72.20
Potassium sulphate,	"	"	0.22
Magnesium sulphate,	"	"	41.80
Sodium chloride,	"	"	0.21
Silica,	"	"	1.17
Calcium phosphate,			trace.
Hydrosulphuric acid,	"	"	0.02
Total	"	"	146.61

Perry County Warm Spring, 14 miles from Harrisburg. F. A. Genth, analyst.

Indifferent.

Calcium carbonate,	grains	per gallon	2.67
Magnesium carbonate,	"	"	1.94

Alkaline salts (chiefly chlorides),	grains	per gallon	1.09
Silica,	"	"	0.60
Organic matter,	"	"	2.90
Total	"	"	9.20

Besides the foregoing are the following, more or less characterized, but unverified by analyses:

Chalybeate Springs:

Addison Ridge, Monroe Township, Bedford County.
Alum Rock Spring, Alum Rock, Clarion County.
Bath Chalybeate Spring, Bristol, Bucks County.
Frankfort Springs, Beaver County.
McElroy's Spring, Westmoreland County.
Near Clarion, Clarion County.
Rose Valley, near Reading, Berks County.
Wildwood Springs, Loretto, Cambria County.

Sulphurous or Sulphuretted:

Adams White Sulphur Springs, 1 mile north of Chaneysville, Bedford County.

Carlisle White Sulphur Springs, near Carlisle, Cumberland County.

Doubling Gap White Sulphur Springs, Doubling Gap, near Newville, Cumberland County.

Lovett Sulphur Springs, 1 mile from Loretto and near Wildwood Springs, Cambria County.

Near head of Mill Creek, in Mead Township, Crawford County.

On Ben's Creek, Somerset County.

In Toboyne Township, Perry County.

Three Springs, Three Springs, Huntingdon County.

Wolford's White Sulphur Springs, Wolford's Gap, Bedford County.

York Sulphur Springs, York Sulphur Springs, Adams County.

Saline Springs:

Saline Spring (Mr. Peterson's), near Tarentum, Allegheny County.

Near Conemaugh, Indiana County.

Near Alba, Bradford County.

Uncharacterized, except by the producers, whose names are appended :

Allegheny Spring, Warren County—J. A. Culbertson & Son, Irvine.

Black Barren Mineral Spring, Pleasant Grove, Lancaster County—James Black.

Corry Artesian Fountain, Corry, Erie County—Thomas Pine.

Eureka Mineral Springs, Saegerstown, Crawford County—G. W. Wright.

Parker Magnetic Mineral Spring, McKean County—N. H. Parker, Gardeau, McKean County.

Pavilion Springs, Wernersville, Berks County—Wenrick & Deppen.

Pulaski Mineral Springs, Wind Gap, Monroe County—George H. Petty.

Sizerville Magnetic Mineral Spring, Sizerville, Cameron County—P. H. Shumway.

Susquehanna Spring and Kingsland Spring, Rush, Susquehanna County—E. S. Butterfield.

WATERPROOF CELLARS.—A cellar can be so constructed as to be waterproof, if the bottom or the floor is first covered with cement, the walls built thereon laid in cement, and the exterior of the walls covered with cement.

This makes practically a water-tight basin. The cement used must be the best Portland cement, one part ; clean sharp sand, one part. After a cellar is built it is not so easy to make it waterproof. Still it can be done. Cover the exterior of the wall with the above cement, ditto the bottom, and work the cement in under the bottom of the wall.

If these directions are followed, you will succeed. But if cheap materials are used and the work badly done, you will be sure to fail. A drain put around the outside of the wall, or even inside, below the cellar floor, may be efficient in carrying off the water if you can give it a good delivery.—*The National Builder.*

PROVISION FOR EPILEPTICS.

By WILLIAM PRYOR LETCHWORTH, LL D., Commissioner of the New York State Board of Charities.

READ BEFORE THE NATIONAL CONFERENCE OF CHARITIES AND CORRECTION, HELD AT NASHVILLE, TENN., MAY 23D–28TH, 1894.

VARIOUS theories as to the cause of epilepsy have been advanced by those who have studied the subject scientifically, but none of them have stood the test of general application; and at the present time the most learned in the study of the subject frankly admit that the nature of the disease is still a mystery. Dr. Ludwig Hirt, in his noted work on "Diseases of the Nervous System," says: "The structure as well as the physiological functions of the human brain are, up to the present time, so little understood that we are far from having any sure basis upon which to lay the foundations of a cerebral pathology." He further says: "By epilepsy in the stricter sense of the term we designate a functional neurosis, the seat of which is still unknown."

Dr. Jules Christian, physician to the National Hospital at Charenton, France, says: "Nobody really doubts that epilepsy is a disease of the brain; upon that all are agreed, but no one has been able to determine with any precision the part of the organ affected, nor the nature of the lesion which produces the disease. All the researches of pathological anatomy have hitherto been at variance." After discussing different theories on the subject, beginning with that of Dr. Marshall Hall, he says: "To any one asking my opinion as to the approximate cause of epilepsy, I should simply reply, I do not know."

Though physicians differ as to the nature of epilepsy, and the wisest admit that they have not yet been able to fathom its mysteries, it is an established fact that certain medical and

moral treatment will render less frequent the terrible manifestations of the disease, and in some instances prevent their recurrence. It is therefore of the greatest importance that such provision be made for this unfortunate class as seems best suited to their needs. The fact that epilepsy is not thoroughly understood, instead of discouraging research into its mysteries, argues strongly in favor of turning upon the subject the concentrated light of scientific investigation and study.

The epileptic is in one sense an outcast. In his own home his presence is distressful and disturbing; the privileges of the church and of places of amusement are denied him; it is difficult for him to find employment; and eventually, the progress of his malady having been gradually accelerated by his unhappy environment, he finds his way into the almshouse or the insane asylum, neither of which is a suitable place for him. In the almshouse he cannot receive the care and treatment which his peculiar infirmity requires, and his presence in the insane asylum is often injurious to the insane, especially the convalescing; moreover, a sense of the injustice of enforced confinement and association with lunatics precipitates a crisis in his own mental condition.

While it is generally admitted by those who have studied this disease with reference to the best interests of those afflicted by it and of society, that care and treatment different from that provided for any other class of dependents is necessary for them, it is nevertheless true that very limited special provision has been made for epileptics in comparison with their numbers. According to returns made to the New York State Board of Charities, there were 614 epileptics in the poorhouses and almshouses of the State of New York on September 30th, 1893. It is estimated that there are 12,000 in the State, and 120,000 in the United States. These numbers are based on an estimate of about two to every one thousand of the population. In Germany the number is estimated to be at least one to every one thousand of the population. A recent census taken of epileptics in the canton of Arrau, Switzerland, made the ratio 2.42 to every one thousand of the population. These estimates include epilepsy of all types. It is thought that the ratio of this class in England is not less than it is in the German States.

The principal homes for epileptics are in Germany, and most of those established within recent years were founded upon the colony plan, which is now regarded as the most advanced system of care for this class that has yet been devised. In a report of a special committee of the Charity Organization Society of London, which was appointed to make a scientific inquiry into the public and charitable provision for the care and training of epileptics and feeble-minded, deformed and crippled persons, we have some valuable suggestions respecting the proper provision for epileptics. The large number of eminent physicians and experienced charity workers engaged in this inquiry entitles the following conclusion reached by them to careful consideration: "For all alike, for the furtherance of self-control and for healthy enjoyment, a well-ordered home life is required. These things—school education, employment of the most suitable and varied kinds, and home life—the colony system provides. As house after house is built for the settlers, the classification becomes more and more complete for all purposes. Each house should be in its internal administration a separate unit, under the charge of a home superintendent or house father. There is thus always large scope for expansion according to actual demand. A large staff of nurses is necessary, and for these special provision must be made. Medically, if the serious nature of the disease be taken into account, the colony system, with careful medical treatment, produces the best results. For the worst cases, and to provide against the constant ailments of many of the colonists, hospital accommodation is necessary; and, for the study of the disease, the fullest opportunity must be given to scientific research and treatment."

Dr. Peterson,* who, while First Assistant Physician at the Hudson River State Hospital, had a large number of epileptics under his charge, and who has studied their needs by personal observations at Bielefeld and elsewhere, thus remarks on the kind of care necessary for this class: "There is but one kind of institution which can meet the case of those who

* Dr. Frederick Peterson, Attending Physician to the New York Hospital for Nervous Diseases; Pathologist to the New York City Insane Asylums; Chief-of-Clinic, Nervous Department, Vanderbilt Clinic, College of Physicians and Surgeons, New York.

suffer from this disease. No asylum, no large hospital, no single vast building in a great city, is appropriate for the purpose. It must be an establishment combining many unusual features. It must have schools and teachers for the education of the young epileptics; it must have offices, shops of all kinds, stores, dairy, farm, gardens, granaries, for as they grow up these patients should acquire trades or professions; it must have a group of small hospital and asylum buildings where such as are sick or mentally infirm may be cared for; it must have skilled physicians; it must have a church, a theatre, a gymnasium, and a bathing establishment; it must have, finally, a pathological laboratory presided over by the keenest pathologist obtainable, so that in the course of time a cause and a cure may be discovered for this terrible disease. Such a place would not be a hospital in the ordinary sense of the term; it would be a village in itself, a colony for epileptics."

It may be of interest to glance briefly at the origin of the colony system. In doing so we must turn our attention to Europe. Some time prior to 1848, John Bost, pastor of a Protestant church at La Force, near Bordeaux in France, out of his sympathy for friendless girls, set out to build a home for them adjoining his church. The members of his congregation, who were poor, aided him with the labor of their hands, and he begged means while preaching in France, England, and Switzerland to secure his object. He succeeded in opening his home in 1848. But other classes of the unfortunate likewise appealing to his sympathies, he soon built another house for young girls who were suffering from incurable diseases, or who were feeble-minded, or who were blind or becoming so. He next put up a house for epileptic girls, and later, one for epileptic women, following with others for those who were dependent and afflicted with disease. His last house was built in 1881. The whole formed a group of families who lived as nearly as possible like families in ordinary homes. Pastor Bost believed in the efficacy of out-door life in the country, as well as medicine, in healing certain diseases, in the advantages of working in the fields and garden, of caring for animals, and in the contemplation of the works of nature. From these homes for epileptics, which form a

part of the mixed colony founded by John Bost at La Force, came the first practical suggestion of colonizing epileptics and caring for them in family groups. The method thus originated formed the basis of a system which has been followed to a greater or less extent on the Continent of Europe where provision has been made for this class.

The celebrated colony of Bielefeld in Westphalia was organized upward of twenty-five years ago, through the humane efforts of Pastor von Bodelschwingh, a Lutheran clergyman, under the auspices of the Provincial Committee of the Inner Mission in Rhineland and Westphalia. It is a private charitable institution, largely supported by receipts from private patients and voluntary subscriptions, but partially by payments from public authorities. It has among its beneficiaries 1100 epileptics, separately classified, who are under the gentle ministrations of the Westphalian Brotherhood and the Westphalian Deaconesses. This colony, with its plain, unpretentious buildings distributed over 1350 acres of land, its church, school, gymnasium, places for entertainment, hospital, carpenter-shop, blacksmith-shop, shoe-shop, saddlery, tailor-shop, basket-weaver's establishment, iron foundry, mill, seed-assorting house, book-bindery, printing establishment, bakery, brick kiln, farm buildings for the care of all kinds of stock, cultivated fields, meadows, orchards, gardens, groves, embellished grounds, trellised vines and attractive dwellings, has more the characteristics of home, family, and natural life than any other existing institution for epileptics. It has been so well described by Dr. Peterson, who visited it in 1886; also in the report made upon it to the Charity Organization Society of London, by Miss E. Burdon Sanderson, who visited it in 1892, and in a recently published work of Julie Sutter, entitled "A Colony of Mercy," that further reference to it seems unnecessary.

There are but two or three homes for epileptics in England, and these are of quite recent origin. The Maghull Home was founded in 1889 mainly through the efforts of Dr. William Alexander and the benefactions of Mr. Cox, a wealthy resident of Liverpool. The principal building of the home is an old manor house, which is situated in the midst of neat lawns and gardens surrounded by shaded meadows, about seven

miles from the city of Liverpool. The cases admitted are chiefly those in which there is a reasonable prospect of cure or amelioration. The system of treatment includes a well-ordered home life, plain diet, careful supervision and employment. This small work, undertaken as an experiment, has been so successful that an attempt is being made to extend it on a larger scale in other parts of England.

At Godalming, in Surrey, the Countess of Meath has lately established a home for epileptic women and children. It has a capacity for fifty patients. The work was inspired by a visit made by this estimable lady to Bielefeld, where she was deeply impressed with the wisdom and benevolence of the work conducted there by Pastor von Bodelschwingh.

There are two or three hospitals for the paralyzed and epileptic in London, but the largest and most important of these, the National Hospital, does not admit chronic cases, and the other two treat the ordinary epileptic only as an out-patient.

The National Society for the Employment of Epileptics is now making an energetic effort to benefit this large class of sufferers, by establishing homes where eight hundred or more sane epileptics may be provided with suitable employment under proper supervision. With this aim in view the society has just purchased a farm in Buckinghamshire, near the village of Chalfont, St. Peters, and commenced improvements upon it. The plan proposed is " To provide a home for those necessitous epileptics who are able and willing to work, but for whom their friends are unable to procure employment on account of the affliction which bars their admission into ordinary fields of industry. It is intended that the cottages shall be arranged for these, and shall each accommodate, according to their size, from ten to twenty epileptics. The sexes will be separated, as will also the children from the adults. Market-gardening, spade and barrow labor, cow-keeping, dairy work, and poultry farming will be the first industries ; then gardening and fruit culture, and later on will follow bootmaking, carpentering, book-binding, printing, and other industries ; and for the women, laundry work, sewing, cooking, and various domestic services."

In this praiseworthy movement, from which much good is anticipated, some of the most prominent men and women in

England are engaged, including the Earl of Malmesbury; A. J. Balfour, M.P.; the Bishop of Argyll and the Isles, the Countess of Aberdeen, the Lady Rothschild, the Lady Battersea, Miss Louisa Twining, Dr. D. Hack Tuke, C. S. Loch, Esq., James Carnegie, Esq., and Sir J. Crichton Browne.

To Ohio belongs the honor of being the first State in the Union to provide a State institution exclusively for epileptics. It was through the forcible presentation to the Legislature, by the State Board of Charities, of the neglect, sufferings, and needs of this peculiar class that the Governor of the State, in 1890, was authorized by the Legislature to appoint a commission to select a site for an institution for their special care and medical treatment. This action, with subsequent legislation, resulted in the establishment of the Asylum for Epileptics and Epileptic Insane at Gallipolis, the corner-stone of which was laid November 12th, 1891. For this new departure in our country, on behalf of a much-neglected class, we are largely indebted to the persistent efforts of General R. Brinkerhoff, President of the Ohio State Board of Charities.

It unfortunately happened in this case, as it frequently does in founding State institutions, that a narrow policy stood in the way of a right beginning. In order to utilize a property already belonging to the State, and formerly used for another purpose, a site was selected having an insufficiency of land. Thus the planting of an institution on the colony or village plan became, to a large degree, impracticable. The whole estate comprises only 105 acres. The buildings form a single group, and, like many other of our State institutions, are designed more to create an imposing effect than to attain the naturalness and diversity of home or family life. The buildings are on the pavilion or cottage plan, in the midst of which stands the administration building. Five cottages have been completed, with accommodation for 250 men; and it is expected that four more will be ready this summer, for the accommodation of 200 women. The plan embraces twelve cottages for fifty patients each. Those erected are of gray sandstone, fire-proof, two stories high, and built at a cost of $15,000 each. There are general dining-rooms, except for the sick and the infirm. In the further erection of cottages it has been decided to place them at a greater distance from

the main group, in order to conform more nearly to the colony system. The aim is to secure the means of classification for those differently affected, hospital treatment for those requiring it, and education and useful employment for those who may be benefited thereby.

In Massachusetts there was opened in 1882 the Hospital Cottages for Children at Baldwinsville. The institution was first organized as a private charity, but is now governed by five trustees appointed by the Governor, and fourteen appointed by the corporation. It has been liberally aided by the State. Children under fourteen years of age are admitted who are suffering from epileptic or epileptiform seizures; children suffering from nervous disorders, not feeble-minded; children with deformities, diseases of the joints and infantile paralysis; also those needing surgical operations and fitting supports. On September 30th, 1893, the hospital contained 103 children. The whole number treated during the fifteen previous months was 170, about two thirds of whom were epileptics.

In 1892 the Governor of Massachusetts sent to the Legislature a message respecting the making of State provision for epileptics, upon which he recommended early and favorable action. His message was accompanied by a report made to him by a committee of experts of the Massachusetts Medical Society, advocating the establishment of an institution in the form of cottage hospitals for epileptics. This report the Governor had previously submitted to the State Board of Lunacy and Charity, which had approved it. The Legislature gave the subject some consideration, but referred it to the next General Court. No action was taken during the session of 1893. The Board of Lunacy and Charity, in alluding to this subject in their report, dated January, 1894, use the following language: "The matter is one that demands prompt attention. The number of these unfortunates is constantly increasing, and, while almost every other class of the sick, the poor, and the afflicted are provided for, no special arrangement is made for adult epileptics, and their only refuge seems to be the insane hospital, in whose crowded wards they are wholly out of place, or the town almshouse, where their only prospect is increased suffering and gradual decay."

In Pennsylvania, at the Training School for Feeble-Minded, at Elwyn, two buildings, one for boys and the other for girls, are now set apart for epileptic children.

A hospital for the treatment of sane epileptics has just been organized upon a limited scale in Philadelphia in connection with St. Clement Church parish. The building occupied was formerly used and known as St. Clement's Hospital.

The Lunacy Committee of the Board of Public Charities of Pennsylvania, in their report for 1893, state that 575 epileptics are detained under the lunacy law in the various institutions for the insane in that State The committee make a strong plea for a State institution for the exclusive accommodation, care and treatment, upon an industrial basis, for this class, the wretched condition of the majority of which, it is asserted, demands relief from the Legislature.

Through the instrumentality of Dr. A. E. Osborne, Superintendent of the California Home for the Care and Training of Feeble-Minded Children, at Santa Clara, this institution secured legislation in 1887 permitting it to establish a department for epileptics, which it subsequently did by erecting a separate cottage building capable of accommodating 75 children ; but this is taxed beyond its capacity, there being 100 of this class now in the institution.

Admissions are restricted to those showing marked mental enfeeblement. Dr. Osborne writes under date of May 9th, 1894 : " It is our intention after the completion of our main building to add other small buildings or cottages to our epileptic department, that we may extend the benefits of the institution to the more curable and hopeful class of epileptics."

A law was recently passed by the Michigan Legislature providing for the care and treatment of epileptics and the feeble-minded in separate buildings on the cottage plan. A farm has been purchased to carry out this project and a contract made for putting up buildings.

A new custodial building for women and girls has just been opened at the School for the Feeble-Minded at Faribault, in Minnesota. and a department for epileptics, with special supervisory care, has been established. Mr. Hart, Secretary of the Board of Corrections and Charities of that State, says : " We

have already, I think, under public care about 120 epileptics. There is some sentiment in the State in favor of a separate institution for epileptics, and I think it possible that our Board may recommend to the next Legislature the creation of such an institution."

In Maryland the plan of buying a small country place and beginning an epileptic colony is being carried out by the King's Daughters of Baltimore.

In some other States State Boards of Charities and Charity Organization Societies have long been, and are still, endeavoring to secure more humane and intelligent care for epileptics. In New York State the attention of the Legislature was directed to the necessity for some special provision for this class by the State Commissioner in Lunacy in his first report, as far back as 1873; and in his subsequent reports Dr. Ordronaux repeatedly emphasized the importance of the subject.

The State Board of Charities, in its report for the year 1878, directed the attention of the Legislature to the lack of proper provision for this class and appealed for State intervention in their behalf.

The present State Lunacy Commission, in its report for 1891, strongly advocated the establishment of a State hospital for the special care and treatment of sane epileptics.

No person in the State of New York, nor in this country, has done more to enlighten the public and influence legislation on this important question than Dr. Peterson. This he has done through addresses before medical and other societies, State conventions of superintendents of the poor, and able contributions to the public press.

Under the auspices of the State Charities Aid Association a bill was introduced in the New York Legislature in 1892, and passed the same year, directing the State Board of Charities to select a suitable site on which to establish an institution on the colony plan for the medical treatment, care, education, and employment of epileptics, and to prepare plans and estimates of cost of buildings, and submit the same to the next Legislature. A committee of the Board, composed of its President and two commissioners, spent a considerable part of the following summer in looking up a site, and finally recommended the purchase of a tract of land situated in the

famous Genesee Valley, the garden of the State. The site was, in aboriginal days, an Indian village, and bore the Indian name of Sonyea, with the poetical signification of sunshine. The tract contains 1872 acres of highly productive land. It was owned by the United Society of Christian Believers, commonly designated Shakers, who, in consequence of a reduction in their numbers, desired to sell their estate and consolidate the settlement with another branch of their society. Over the property was distributed a large number of buildings, including comfortable dwellings, capacious barns, stables, workshops, and a mill having a good water-power supplied by an unfailing, quick-flowing stream, which centrally traverses and drains the whole property. Here are extensive orchards of apple, pear, peach, plum, and apricot-trees, with large berry and vegetable gardens, producing every variety of garden products. The place is easily accessible. A north and south railway, with a station upon the property, intersects all the east and west trunk lines of railway that pass through the State. The property is in every way admirably adapted for the purposes of an epileptic colony, it having been used and developed by the Shakers as a colony.

Based upon the report of the State Board of Charities, a bill was introduced in the Legislature in 1893, by the request of the State Charities Aid Association, to purchase the Shaker property, and to establish thereon a colony for epileptics to be known as the Sonyea Colony. The bill was almost unanimously endorsed by the Legislature and by the public press, but for economic reasons was not approved by the Governor. Thus, after much labor and sacrifice of time, those interested in charity work, especially in the epileptic class, were sadly disappointed.

The same bill, however, with slight modifications, was introduced under the same auspices in the Legislature of 1894 by Hon. Hamilton Fish and has become a law of the State. This act, memorable in the history of New York State charities, was approved by Governor Flower, April 26th, 1894, having passed the Assembly by a vote of 96 to 4 and the Senate by a unanimous vote. It is designated "An Act to establish an Epileptic Colony and making an appropriation therefor." For the purpose of doing away with the sugges-

tion of an institution for a diseased class the word epileptic was omitted from the legal name of the corporation. With a view to memorialize fittingly the distinguished public services of Hon. Oscar Craig, late President of the State Board of Charities, whose death occurred January 2d, 1894, the following declaration was made in the first section of the act:

"There shall be established in Livingston County, in this State, a colony for epileptics, to be known as the Craig Colony; thus named in honor of the late Oscar Craig, of Rochester, N. Y., whose efficient and gratuitous public services in behalf of epileptics and other dependent unfortunates the State desires to commemorate."

The objects of the colony are stated to be "to secure the humane, curative, scientific, and economical treatment and care of epileptics, exclusive of insane epileptics."

The act requires that the buildings and improvements upon the property shall be utilized, and that a general plan shall be adopted in accord with the recommendations in the report of the State Board of Charities to the Legislature in 1893, and that subsequently all buildings shall be made to subserve such design and recommendations and true economy.

The colony is subject to the supervision of the State Board of Charities, and the Board is required to report annually what appropriations are necessary for it. The Board of Managers consists of five persons appointed by the Governor, by and with the advice and consent of the Senate, for terms of five years, their terms so arranged that one member retires annually. They receive no compensation for their services, but are allowed their reasonable travelling and official expenses. The Board of Managers appoints the superintendent and treasurer, and is charged with the entire government, discipline, management, and business of the colony. The superintendent is the chief executive officer, subject to the supervision and control of the Board of Managers, and it is required that he must be a well-educated physician, a graduate of a legally chartered medical college, with an experience of at least five years in actual practice in his profession, including one year's actual experience in a general hospital, and that he shall be certified as qualified by the Civil Service Commission, after a competitive examination. The superintendent ap-

points the steward, matron, and subordinate officers and teachers, and determines their salaries, subject to the approval of the State Comptroller. He may, in his discretion, suspend or discharge any of his subordinates.

Epileptics of all ages residing in the State, who are dependent, are received and gratuitously supported. They are designated as State patients. Such other epileptics as can be conveniently accommodated are admitted by special agreement upon such terms as are deemed just by the superintendent, and are designated as private patients. In the reception of patients, preference is given to poor or indigent epileptics or the children of poor or indigent persons. Preference is also given to those who are partially indigent over those who are able to furnish support. For State patients there must be paid annually by the authorities sending them the sum of $30 each for clothing. Should an epileptic State patient become insane he is transferred to the State Hospital of the district, or institution for the insane in the district, of which he was a resident prior to his admission.

Before deciding upon the selection of the Sonyea site every possible precaution was taken by the committee of the State Board of Charities to guard against mistakes. Statistics were gathered showing the healthfulness of the locality ; a chemical analysis was made of the water, to determine its purity and suitableness for family use ; a civil engineer was engaged to examine and report on the sufficiency of the water supply and the facilities for disposing of sewage ; and a survey was made of the land, to determine its boundaries and acreage. The numerous buildings upon the property were also examined by the architect,* and their capacity and adaptability to colony purposes considered.

The plans submitted to the Legislature were based upon principles previously enunciated by Dr. Peterson, who is considered the highest authority in our land upon this subject. It is gratifying to state that the Governor has appointed him a member of the Managing Board, and that he has since been elected its president.

It would seem, with this magnificent estate for a founda-

* George J. Metzger, of Buffalo.

tion, and the favorable auspices under which it begins its existence, that we may reasonably expect in the Craig Colony the attainment of an ideal institution.

The colony system for the care of epileptics, which has proved so beneficent on the Continent of Europe, was developed there under the auspices of private and unofficial charity. Whether we shall attain as satisfactory results under a State and official system as under one directed by a spirit of pure benevolence is a question. However this may be, to organize the work in the State of New York on a large scale on the basis of private charity has been found impracticable. We may indulge the hope that the work as undertaken by the State will be more comprehensive than it would have been otherwise, and that the aggregate of good. if measured by the number benefited, will be greater.

PHYSICAL FITNESS FOR SERVICE IN THE FRENCH ARMY.

THE *Province Médicale* for March 31st contains an abstract of an article published in the *Bulletin Officiel*, setting forth instructions which will, in the future, serve as a basis for the plan of operation in the examinations and in the recruiting bureau. This document carefully reviews all the preparations relative to the auxiliary service, to exclusion from it, to the enlisting, and to the pay and the pension. It indicates the method of examining men who are rendered incapable, by reason of sickness or infirmities, of serving, also the means of detecting those simulating sickness. The most interesting part of this document is the list of infirmities and deformities compatible with the auxiliary service. Men attacked with any one of these infirmities will not be called upon except in case of war or mobilization. Aside from these cases, young men who are simply sickly or of feeble constitution will be employed in the accessory service or in the section of administration. The following list is an enumeration of the infirmities under which are classed the men who are in the auxiliary service:

1. Feeble constitution.

2. Obesity.

3. Pityriasis and ichthyosis, if the first is not extensive and the second is not generalized.

4. Benign tumors, cysts, fatty tumors, etc., cicatrices situated in regions where they do not affect the ability to carry the regular equipments.

5. Nævi materni and erectile tumors which are but slightly developed or are not exposed to constant pressure.

6. Extensive alopecia independent of favus and of ringworm of the scalp; benign tumors of the cranium, such as wens and exostoses; horny outgrowths and cicatrices which do not cause any inconvenience other than that of annoyance in wearing the military cap.

7. Entire loss of the external ear, its partial adhesion to the skull, and malformations which are not very extensive.

8. Perforation of the membrana tympani without otorrhœal complications.

9. Extreme deformity.

10. Facial mutilations.

11. Symblepharon, which, unless causing much trouble in the movements of the eyelids, is no obstacle to the visual function.

12. Ciliary blepharitis without inversion of the eyelids.

13. Opacity of the cornea, exudations involving the pupil, according to the intensity of diminution of the visual acuity.

14. Myopia exceeding six dioptres, if the visual acuity can be brought to the proper limit by means of concave glasses, and if there are no extensive chorioid lesions.

15. Hypermetropia and astigmatism.

16. Functional strabismus.

17. The loss of a large number of teeth, if the gums are not altered, and if the condition of the subject is satisfactory.

18. Congenital or accidental harelip, if not very extensive.

19. Stuttering, if not sufficiently pronounced to prevent the intelligible transmission of orders.

20. Tumors of the neck, such as goitre, serous cysts, and adenitis, slightly developed.

21. Deformities of the chest, such as sinking or protuberance of the sternum or of the ribs which does not detract from

the functions of the internal organs ; non-development, abnormal curvatures, pseudarthrosis of the clavicle, and deformities of the shoulder-blade which do not impede the movements of the upper limbs.

22. Inguinal and crural hernia which does not extend beyond the external orifice of the canal.

23. Cryptorchidism, when the subject presents the general characteristics of virility.

24. Congenital or acquired deformities which do not noticeably impede the functions, such as a voluminous and, at the same time, slightly deformed callosity, a moderate incurvation of the upper or lower limbs, inequality of the upper limbs, and contracture of the lower limbs if it results only in a slight lameness.

25. Varicose veins if they exist in the condition stipulated for non-acceptance in the active service.

26. Chronic hygroma and synovial cysts, if sufficiently pronounced for exclusion from active service, but not impeding the action of the joints.

27. Stiffness of a joint, with slight diminution of freedom in the movements, which does not perceptibly impede the action of the limbs, such as incomplete extension of the forearm on the arm and incomplete flexion of the leg on the thigh, the reverse movements being entirely free ; permanent and complete flexion of the little finger of either hand, and incomplete flexion of several fingers.

28. Incurvation, loss, or mutilation of the fingers or of the toes, not compatible with active service, which do not noticeably embarrass the functions of the hand or foot.

29. Supernumerary fingers and toes, overriding of the toes, hammer toes, subungual exostosis presenting itself under the conditions named for non-acceptance for active service.

30. Defective stature.

AN ARTIFICIAL HORSEBACK RIDE.—An ingenious Londoner has invented a saddle arrangement which gives to the person astride it all the motions of a horseback ride. By varying the adjustment, one gets a trot, a gallop, or a walk.

THE SHONE SYSTEM OF FILTH REMOVAL.

ADOLPHE SMITH, in a communication from London, April 17th, 1894, to the Philadelphia *Telegraph* (April 30th), describes the conditions common to cities devoid of soil drainage and sewerage, and gives the result of his observations on the efficiency of the Shone system of filth removal in contrast with some other methods, as follows:

"When, in 1892, I was investigating the causes of cholera at Havre, I had naturally many opportunities of discussing with the local authorities the question of draining that town. As I have already explained, when writing on the spot, Havre has practically no drainage at all. There are a few sewers, but the greater part of the drainage flows along the open street gutters. To make matters worse, there are very high houses and very narrow streets. Apart from the ordinary population, some 10,000 Breton laborers and their families, who are exceptionally ignorant and dirty people, inhabit precisely that part of the town which is the most difficult to drain. These districts are below the high-water level, and the subsoil is water-logged. How was it possible, I was asked, to build sewers in such a district? It then occurred to me to suggest that the Shone system might with advantage be applied to such a quarter.

"Those persons who have been to the Chicago Exhibition will probably be acquainted with the Shone system, for it was employed to drain a great portion of the Exhibition grounds. Here Shone ejectors capable of raising 11,520,000 gallons of sewage in the twenty-four hours were employed. In a word, the system consists of an apparatus called an ejector, which receives sewage. When it is full the air contained in the ejector is pressed up against a bell suspended at the top. This pressure suffices to lift the bell, and it works upon a spindle which opens a valve. When the valve is open, compressed air rushes into the ejector and not only forces all the sewage out, but can raise it to a considerable height. As the force employed is air, there is but little friction and practically no

wear or tear. The air is compressed by a steam-engine situated in a convenient position, perhaps two or three miles away from the ejector. The compressed air is delivered from the air-compressing station to the ejectors by means of iron pipes similar to those used for delivering gas in houses.

"The advantage of the system is that the ejectors can be made of any size, and that any number may be employed. They can be placed under any street or house without causing inconvenience, so that wherever the fall or gradient is insufficient an ejector can be placed to lift the sewage and thus create artificially the required levels. Formerly sewage was raised by powerful steam pumps; but these are expensive and cumbersome and cannot be employed in thickly populated and frequented districts. In a word, they cannot be placed just where they are wanted. It seemed, therefore, that the Shone system might be applied with advantage at Havre; for with the aid of these ejectors the thickly crowded low-lying districts could be drained. Instead of digging deep down in the wet movable soil to make the sewers go down far enough to ensure gravitation, sewers could be laid much nearer the surface of the street, and their contents raised at short intervals by the ejectors. Of course this applies equally to all other towns where the ground is flat, and therefore this is a question of very general interest.

"At Havre, however, the authorities had no experience of the working of the Shone system; so they determined to send a delegation over to England to study on the spot this method of drainage. The Mayor of Havre, M. Louis Brindeau, asked if I would assist the delegation in its investigations, a proposal to which I, of course, readily assented. Accordingly I went down the other day to Southampton to meet M. Fevrier, the engineer of the town of Havre, and M. Delachanal, the engineer of the Havre Chamber of Commerce. During the last ten days I have been travelling about with these gentlemen, to show them how English towns are drained, both with and without the aid of the Shone ejectors. At Southampton the sewage is accumulated in great tanks. Here the heavy mud, sand, etc., it contains is precipitated. A Shone ejector raises the clarified sewage and throws it into the Southampton waters, and another and more powerful

ejector raises the heavy mud or sludge, as it is called, and sends it to the sewage works, where it is mixed with street sweepings and sold as manure. But a better illustration of the power which compressed air can exercise was given at Eastbourne, one of our most fashionable seaside resorts. Here the sewage used to flow back up the sewers when the tide rose.

"In this way houses and streets were sometimes flooded, and the sewers were constantly filled with sand brought in by the sea. It was very difficult to keep the sewers clean. Now, however, a wall or dam has been built right athwart the sewer, at a distance of 7000 feet from the place where the sewer, at a point situated below low-water level, opens out into the sea. From this point to the outfall there is fairly good gravitation; but when the tide rises the sea water comes right up to the dam, but there it is stopped by the wall and cannot go farther toward the town. On the other side of this wall are powerful Shone ejectors, which are strong enough to raise the sewage and throw it through the wall right against the full force of the rising tide. Thus, whatever the condition of the tide the sewage is propelled forward. It never stops for a moment; it has not time to form deposits or to ferment. As Eastbourne is very flat, there are two other ejectors stationed to raise sewage from low level into higher level sewers, and thus proper gradients in the sewers are maintained without having to dig too deeply.

"We also went to Portsmouth, and there the old system of a steam pumping station is employed. The result is that the sewers of the town have insufficient fall. They are not self-cleaning, and have to be frequently cleaned out by human labor. Then, when finally the sewage reaches the sewer outfall, the sewers, in spite of their insufficient fall, have reached a depth considerably below the level of the sea. Therefore gigantic steam pumping works have been built to raise the sewage; and even then it can only be discharged into the sea twice a day, when the tide is commencing to flow outward. So, besides the pumping station, large reservoirs have been built to store the sewage till the right moment of the tide. All this seemed very expensive and clumsy as compared to the method of draining Southampton and Eastbourne.

"After spending some time in these three towns, we came to London and saw the Shone system, as applied to the drainage of the Houses of Parliament. Formerly, when there was a storm of rain the sewage from the Westminster main sewer flowed back into the sewers of the Houses of Parliament, forcing the sewer gas up into the House, much to the distress of Peers and Commoners. Now the connection with the main Westminster sewer is walled off, and the drainage from the Houses of Parliament is lifted by Shone ejectors and thrown up through the wall into the public sewer. No back wash is possible. We also went to Isleworth to see how the suburban districts in the Thames Valley are drained, and to Crossness to see the gigantic South London sewer outfall works. Here there is the largest pumping engine of the world.

"A volume might be written to describe all that we saw during these few days, and I think the French engineers were greatly impressed with the magnitude of the works and the enormous sums of money we in England have spent in the attempt to drain satisfactorily our great towns. I do not believe their impressions concerning the accommodation given in English hotels was equally favorable.

"England is a very bad country for travellers. Cleanliness is the principal, in many instances the only, virtue to be found in English hotels. The most exorbitant charges are made for the most commonplace of meals. In London, at the Craven Hotel, in Craven Street, close to Charing Cross, three quarters of a dollar was charged for a breakfast such as the British workman has in his own home for about four to six cents. This consisted of a little smoked haddock, some bread and butter or bread and jam, and some tea. The haddock consumed certainly did not cost more than three to four cents each person. The bedrooms were small, dear, and the charge for attendance heavy. There was no pretension at cooking; what was given could be obtained in any workman's home, and yet this in a hotel greatly frequented by travellers both English and American. . . ."

CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

THIRD TRIENNIAL MEETING, HELD AT WASHINGTON, D. C., MAY 29TH, 30TH, 31ST, AND JUNE 1ST, 1894.

PROCEEDINGS OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION.

FIRST DAY, TUESDAY, MAY 29TH.

THE ELEVENTH ANNUAL MEETING of the American Climatological Association was held at Wormley's Hotel, Dr. Andrew H. Smith, of New York, President, in the chair.

Dr. Smith in his opening address referred to the many and valuable papers to be read at this meeting of the Association. The papers were timely and valuable. They were by experts in the several callings. The American Climatological Association was advancing in its path of usefulness with *éclat*.

The first paper on the official programme was by Dr. Andrew H. Smith, the President. Its title was "Alimentation in Pulmonary Disease."

Alimentation in pulmonary disease, he said, is a matter of great importance. While it has an importance in all diseases, it has a special importance in lung diseases. Food may have a good or a bad effect, depending wholly on the assimilation of the products of digestion or otherwise. As yet we do not know the exact mode of blood production. We do not know where the corpuscles are formed. For perfect assimilation of food there must be oxygenation, and that is got from fresh air.

Unassimilated food is a source of irritation to the economy. In pulmonary disease the action of the lungs is impaired. Undigested food is useless to the economy. For perfect metabolism the blood must be perfectly aerated. An intelligent study of phthisis clearly shows the folly of overfeeding. We simply embarrass the diseased lungs. Give as little food as

may be necessary. The whole tendency in the past has been to overdo it. Recall the old treatment of pneumonia; it consisted in forcing food on the stomach. Not only were the lungs impaired, but toxemia was a result of overfeeding. Such efforts to maintain the patient's strength were a mistake. Harm results from crowding the vessels. Double work is thrown on the heart when such a course is followed in pneumonia and other pulmonary diseases.

What shall the diet be in pulmonary disease? All forms of food were originally derived from the vegetable kingdom. Flesh food is more readily digested than carbo-hydrates. Nourishment should be given in small quantities and repeated. No forcing food on an unwilling stomach. Give water freely. The instinctive feeling of the patient may be relied on as to what will keep the blood fluid.

In chronic lung disease high nutrition is necessary, as in fibroid phthisis. In such cases the patients are almost bloodless, with white faces and white conjunctivæ. The pabulum from the food does not get into the circulation. In such cases we have hæmoptysis sooner or later. The respiration is impaired, and no oxygen enters the blood—oxygen so necessary to hæmatosis, as well as for the whole process of metabolism. The blood becomes poor from imperfect hæmatosis. In treating cases we cannot rely solely on flesh foods. Dyspepsia often is present. To such patients life in the open air is of immense value.

He then referred to cases in his practice. He has been most successful with rectal injections of defibrinated blood, using two ounces at a time. In the motion following such injections no trace of blood will be found. It seems to be absorbed, and to him such injections were quite the equivalent of transfusion. He gave the history of a patient at the Presbyterian Hospital, New York City, whose weight was one hundred and six pounds. Day by day, on visiting the ward, he expected to find an empty bed—that the patient was dead. On November 5th he gave blood enemata ʒ ij. at bedtime. In a month the man had gained six pounds. At the end of three months there was a gain of thirty-three pounds. Man left hospital apparently well. Let your consumptives live much in the open air.

Regarding alcohol in pulmonary disease, he had yet to be convinced that it had not a nutritive value in acute as well as in chronic lung diseases. When the odor of alcohol is found in the patient's breath, he is getting too much.

The second paper was by Dr. Boardman Reed, of Atlantic City, on "The Relation which Alimentation should bear to Oxygenation in Lung Diseases."

He took up the subject of forced feeding. He deemed it just as great a mistake in pulmonary as in other diseases. An excess of food is absolutely injurious. There should be a ratio between the oxygen and the food taken. Where the intake of oxygen is large, then a large quantity of food can be assimilated. A patient with impaired lungs requires less food. Overfeeding simply results in injury, as he cannot assimilate it.

Physicians should make a close study of diet. He then proceeded to cite case after case, showing the direct advantage of a carefully regulated diet. A man, aged thirty, an expressman, consulted him. Patient, taken ill in August, 1893, was seen January 19th; had gone to bed in November; had been liberally fed; temperature, 101°–102°; weighed one hundred and twelve pounds two weeks before; at the time of the consultation it was less; nummular sputa; dulness right apex; left apex was infiltrated; was in a small, badly ventilated room. Ordered windows open all day and open a little at night; sponging body with cool and later with cold water. Previously there had been frequent vomiting; creosote checked the vomiting; stomach regained its tone; ventilation of room and sponging of body did great good. Patient took a breakfast of beefsteak and salt preceded by hot water. A light lunch and dinner. He showed steady gain; temperature at end of two weeks 99½°; night sweats disappeared; cough dry; he gave iodide of arsenic; painted chest with iodine over affected area. At end of month he had greatly improved; he kept him out of doors; weight then one hundred and twenty-six pounds, temperature 99°. February 22d, had a relapse; he had eaten a hearty meal at midday. Examined chest, found moist *rales;* went back to a strict dietary. May 2d, weight one hundred and thirty-two pounds. The man appeared in robust health and returned to his work. He

had had no cough for three or four weeks; no pain in the chest—in short, he got more air and less food.

Diet and hygienic regimen are necessary. Under the old treatment of food, food, food, they did not improve. We want pure blood circulating in the lungs. When fever is present in lung cases rest of body is necessary. Let them rest on a bed or hammock, the latter in the open air if possible. Day and night have an abundance of air about them.

Regarding the climatic treatment of lung disease, certain climates are more favorable than others. Climate is not of so much importance. The colder the air the better, if they can breathe it freely. Change of climate benefits many; it stimulates nutrition. Climate is not the important factor that it once was deemed. Pure air and lots of it are of more importance.

Twelve years ago a clergyman consulted him. It was a plain case—consolidated apices. He requested him to abandon his pulpit for a full year, to go into the country and live in the open. He got well, and in a year returned to his work.

A discussion followed the reading of the papers of Drs. Smith and Reed. In reply to a question Dr. Smith said that it was his rule in hospital practice to have his patients lightly fed for a few days after entrance. All the acute febrile diseases were attended with a suppression of digestive fluids as well as the fluids of the intestinal tract. In a few days the body became accustomed to an abnormally high temperature and accustomed to the products of bacterial activity.

Dr. Robert H. Babcock, of Chicago, said that there were two points of great importance: staying the waste of the tissues that takes place in pulmonary disease, and in building up the body. Fat taken lessens the demand for air. In lung diseases there is a lessened ability to take in oxygen. In acute disease, as in acute pneumonia, in feeding our patients with milk it should be as rich in cream as they can digest. We must remember that the pulmonary circulation is under much higher pressure; the pulmonary circuit is smaller than the systemic circuit; where there is a cavity there is danger of hæmoptysis.

Dr. Reed's paper, he said, showed the effect of diet—the antipyretic action of air. Under the well-known Franken-

stein treatment the patient was kept out of doors. Air, fresh and cool, acts as an antipyretic, and by lessening febrile temperature it improves the assimilative powers of the patient.

Dr. Von Ruch, of Asheville, N. C., had made a study of blood injections. He had noted marked improvement where defibrinated blood had been injected *per rectum.* In six weeks remarkable results obtained.

Dr. D. W. Prentice said that the amount of carbonaceous food had to be watched. He gave some remarkable results in asthma and bronchitis. An intelligent patient had experimented on himself; had had asthma, and very frequently was threatened with suffocation. He placed himself on a strict diet of lean meat and vegetables, but no carbonaceous food. He kept a faithful and careful record of his weight, the weight of the food and water taken, and weight of excretions. The attacks of asthma ceased. Later he returned to full diet at his hotel; in two days he produced an attack. An excessive use of carbonaceous elements must be eliminated by the lungs. He returned to his early diet of lean meat, etc., when the asthma disappeared. Again went on full diet and produced asthma. The carbonaceous diet did it.

Medical Director Albert L. Gihon, U. S. N., cited the case of a marine, a phthisic, who got well by work in the open. The tubercle bacilli disappeared.

Dr. Andrew H. Smith said that he was very pleased that Dr. Von Ruch's cases confirmed his work. He believed in defibrinated blood. In reply to a further question, he said that the blood was injected once a day, two ounces at a time.

The third paper was by Dr. Glentworth R. Butler, of Brooklyn, N. Y., on "The Methods and Value of Supervised Exercises and Diet in the Prophylaxsis of Pulmonary Phthisis."

In a general introductory statement he defined pulmonary tuberculosis as a disease of malnutrition—a microbian affection. Certain people showed a vulnerability of the tissues. The various tissues of the human body vary in their resistance to the invasion of the bacilli. He said that special medication in phthisis was a chimera. We must seek for relief for our patients in climate, abode, personal hygiene, exercise, and its corollary rest, diet; etc. Any device that will fortify

the cells and strengthen the body should be employed. Reinforcements should be sent to the besieged. Regulated exercise was necessary ; the patient must be told what to do. Precision in the treatment of disease, said Dr. Weir Mitchell, of Philadelphia, was just what was necessary here.

He defined the pretubercular stage as well as incipient phthisis. Hæmoptysis he defined as pathognomonic—exercises general and local, thereby increasing the bulk and strength of the muscles. There was better action of the skin, improved digestion. Neuro-muscular training improves the system. Pulmonary gymnastics strengthens the muscles of inspiration and expiration ; promotes exchange of gases. Pulmonary exercise brings the vital force of the lungs to its maximum. It means increased pulmonary expansion. Deep breathing several times a day was of great value. General exercise without fatigue ; more sleep follows ; more exercise. He reported four cases where excellent results had followed such treatment. He exhibited a series of photographs showing the various attitudes and practices.

Dr. Otis, of Boston, warmly approved of Dr. Butler's system. To-day, he said, modern gymnastics are applied scientifically. Yearly he examined fully five hundred young men. At first all their measurements were carefully taken on entering or ere any exercise was permitted. The vital and ordinary capacity of the chest was taken. The exercises were conducted by an expert, as in the cases cited by Dr. Butler. At the end of six months all in the gymnasium were carefully examined anew, when improvement was found in every case.

The modern physician must make a study of modern gymnastics, just as he studies the action of drugs. In applying pulmonary gymnastics, all under his observation improved.

Dr. John Winters Brannan, of Bellevue Hospital, New York, referred to his experience while a practitioner in Colorado. He was strongly in favor of deep breathing and pulmonary gymnastics. He referred to cases that had left Colorado for Boston for just such treatment. They returned to Colorado improved. The value of pulmonary gymnastics was great.

Dr. J. B. Walker, of Philadelphia, was pleased to note that no special claim had been made for the value of a seaside resort as over that of the mountains.

Dr. Brannan asked Dr. Butler how the exercises were practised, particularly those intended for expansion of the apices. Dr. Butler demonstrated how it could be done for apices and bases.

The fourth paper in the morning's programme was read by title, as Dr. Clarence G. Rice, of New York, was unable to attend. Its title was "The Importance of Mouth Cleanliness in the Prevention of Disease."

On motion the session adjourned to the following day.

(*To be continued.*)

WELL SIZED UP. BY ONE WHO OUGHT TO KNOW.—Rev. J. B. Hawthorne, of this city, said in his sermon, February 18th: "*If all the thieves were put into the chain-gang to-morrow . . . it would shut the doors of real-estate offices and thin the ranks of the legal and medical fraternities.*" In regard to the real-estate business, Dr. Hawthorne probably speaks by the card, because he has been interested in some land schemes himself in a quiet way as a "side line" to the sacred ministry. He therefore knows the tricks of the trade. We do not know what motive or experience prompted the good doctor in his stricture upon the medical fraternity. The only relation that we know of which he has sustained toward the medical profession has been to receive free medical attention for himself and family whenever occasion required. Such insinuations, therefore, as the above come with very poor grace, and savor of the meanest ingratitude. And all of this, too, from a man, a minister, who owns, or did own, a large part of the stock in a patent medicine humbug (King's Royal Germeteur), which consists only of the addition of one pint of hydrochloric acid, costing twenty cents, to a barrel of water, costing nothing, the mixture selling for one dollar a quart! The doctor ironically selected for his text that morning, *He that is without sin among you, let him cast the first stone.* We think that this great evangel of all that is good and honest, who poses as the public censor, might make a personal application of his text with considerable advantage.—*Atlanta Medical and Surgical Journal.*

BOSTON MEDICAL
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THE MEDALS, JETONS, AND TOKENS ILLUSTRATIVE OF SANITATION.*

By Dr. H. R. STORER, of Newport, R. I.

THE following additional pieces have come to my knowledge since the last publication in THE SANITARIAN for March, 1893, and may be considered as *Supplement IV.*

I. *General.*

SOUTH AMERICA. *Argentine Republic.*

2123. Obverse. Armorial shield. Inscription: La Facultad De Ciencias Medicas De Buenos Aires.

Reverse. Within laurel: Premio Higiene Internacional 1888. Bronze.

Rosa, *Monetario Americano*, Buenos Aires, 1892, p. 146, No. 493.

2124. Obverse. A Maltese cross. Within its arms: Mens—Sana In—Corpore—Sano. Inscription: Club De Gimnasia Y Esgrima (fencing) 12 De Nov. 1884 B^s^ Aires.

Reverse blank. Bronze. *Ibid.*, p. 146, No. 489.

2125. Obverse. Implements of fencing. At sides: Mens—Sana In—Corpore—Sano. Beneath: Buenos Aires. Inscription: Club De Gimnasia Y Esgrima.

Reverse blank. Plated. *Ibid.*, p. 147, No. 495.

2126. Obverse. Gymnastic clubs and gloves. Mens Sana In Corpore Sano. Inscription: Club De Gimnasia Y Esgrima * Buenos Aires *

Reverse. Within laurel: Concurso De Gimnasia Setiembre * 1889 * Plated. *Ibid.*, p. 147, No. 496.

ENGLAND.

2127. Obverse. Bust, to right. Inscription: R. Lambert Jones, A.D. MDCCCXLIX.

Reverse. Within wreath: Presented By His Grateful Fellow Citizens To Commemorate Exertions By Which The City Of London Was Improved, Art Encouraged, Health And

* Continued from THE SANITARIAN of March, 1893.

Convenience Promoted. 65 mm. By W. Wyon. Blades, *Numismatic Chronicle*, N. S., X, 1870, p. 62.

2128. Obverse. Diademed head, to left. Inscription: Victoria Regina

Reverse. The globe, supported by Hygieia and Knowledge. Below the first: Health. Below the second: Education. Inscription: The International Health Exhibition. Exergue: London 1884 Gold.

2129. Obverse. Hygieia.

Reverse. Within field: For Distinguished Merit. | Medal Instituted 1877 July 11 Inscription: British Medical Association. (By B. Wyon.)

I owe its description to Mr. W. P. Hall, Registrar of the Medical Society of London, through Dr. Sir W. O. Priestley.

2130. Obverse. Hygieia, within oval, upon red ground. Above the oval a crown, surmounted by a crowned lion, both of which are raised. Inscription: International Congress of Hygiene, 1891.

Reverse blank. Gold, upon dark enamel. Oval. 16x19. 26x30 mm.

I have its impression from Dr. A. E. Tyng, of Chicago.

2131. Obverse. Bust, to left. Beneath: L.—W(ilhelm) Mayer (of Stuttgart). Inscription: H.M.G.M. Queen Victoria.

Reverse. A laurel wreath. Inscription: International Exhibition For Hygiene, Pharmaceutics And Foods, London 1893 Bronze. 41. 65 mm. *Monatsblatt der Num. Gesellschaft in Wien*, April, 1893, p. 224.

2132. Obverse. Diademed female bust, to left, with necklace. Beneath, at left: Ed. Geerts (of Brussels) F. At right: T. W. Cutler Inv In front: Hygeia Inscription (incused) at sides and below: National Health Society

Reverse. Within crossed olive branches, incused: Awarded | To

Heart-shaped, with ornamental edges. Silver, bronze. 35x38. 55x60 mm. (Exhibition of 1883.)

I have impressions through Mr. A. de Witte, of Brussels, from the specimen in the cabinet of the Royal Numismatic Society of Belgium. This medal was awarded by examination, but has now been discontinued for another. The society

was founded in 1872 for the diffusion of sanitary knowledge in all classes of society.

2133. Obverse. Within circle the Geneva cross, raised. Beneath: Hygiene | Ambulance | Nursing Inscription: National Health Society

Reverse blank. Silver. 26. 40 mm. I have impressions from Dr. Tyng, of Chicago.

2134. Obverse. The Geneva cross, upon a white ground. Above: N. H. S. (National Health Society.)

Reverse blank. Enamel. Shield-shaped. I have impressions from Dr. Tyng.

2135. Obverse. Within crossed oak branches, Hygieia erect to right, feeding serpent from patera. Inscription: Prize Medal of The Sanitary Institute

Reverse. Within field: Awarded | To | – – | By The Sanitary Institute of Great Britain | As A Special | Mark of Merit Inscription: Exhibition of Sanitary Apparatus And Appliances Dublin 1884 Bronze. 32. 50 mm.

The description I have from Dr. F. P. Weber, of London. The first medal was at Leamington, in 1877. After 1888, the medal was discontinued for the following.

2136. Obverse as preceding.

Reverse also, save without Of Great Britain. In addition: Worcester | 1889 Bronze. 33. 52 mm.

I have the description from Mr. A. H. Lyell, of London. There were similarly, Portsmouth, 1892, etc.

FRANCE.

2137. Obverse. A gymnast, with club of Hercules, crowned by Hygieia. At right: A Borrel Inscription: Robvr. Hygia

Reverse blank. 32. 50 mm. *Méd. Fr. du Musée monetaire*, p. 544, No. 30.

2138. As preceding, but 26. 41 mm. *Ibid.*

2139. As preceding, but 21. 32 mm. *Ibid.*

2140. Obverse. Bust, to left. Beneath: Dantzell F. Inscription: Napoleon III. Empereur.

Reverse. Paris, holding Abundance in one hand, extends with the other an order to Architecture: the buildings in distance. Upon base: MDCCCLVIII. Inscription: Abon-

dance Salubrité. Exergue: Halles Centrales De Paris. 43. 68 mm. *Ibid.*, p. 478, No. 6.

BELGIUM.

2141. Obverse. Head of Lt. Gen. Renard. (By Wiener.)

Reverse. The arms of Germany, England, Austria, Belgium, Denmark, Italy, France, Holland, Russia, Sweden, and Switzerland, with emblems of Hygiene, etc. Within: Au Lieutenant Général Renard Promoteur De L'Exposition D'Hygiène & De Sauvetage. Bruxelles 1876. Temoignage De Reconnaissance Publique. Bronze. 38. 60 mm. Schulman Cat., May 15th-17th, 1893, No. 1099.

2142. Obverse. Head, to right. Beneath: Lemaire Inscription: Leopold II— Koning Der Belgen

Reverse. The arms of Belgium, very elaborate. Beneath: Exposition Internationale | De | Boissons Fermentées | Hygièniques | — | Bruxelles— 1893 | X Gold, enamel, silver, gilt copper, plated, bronze. 32. 50 mm. De Witte, *Médailles historiques*, p. 23, No. 10, pl. VI.

Medal of the Association pour le progrès de l'hygiène. There have been six other expositions by this society: at Ostend, 1888; Ghent, 1889; Liege, 1890; Brussels, 1891; Spa, 1891, and The Hague, 1892.

GERMANY.

2143. Obverse. View of city. Exergue: Dresden.

Reverse. Within laurel wreath, bound throughout by ribbon: Inter- | Nationale | Sanitats- | Konferenz | Dresden | März-April | 1893 Silver. 22. 34 mm.

Blätter für Münzfreunde, 1893, 189, p. 1821. In my collection.

2144. As preceding, but smaller. 11. 17 mm. Thieme, *Numismatische Verkehr*, July, 1893, No. 2907. There are several allegorical medals interesting in this connection.

2145. A Lombard sequin of 1555, struck by Reggio nell' Emilia, with legend: Cvivs. Crvore. Sanati. Svmvs. Reimann Cat., Frankfort, 1891, Part I., No. 791.

2146. A medal of 1767, of Wilhelm Friedrich Ernst of Lippe. Legend: Fructus. Litterarum. Mens. Sana. *Ibid.*, Part II., No. 5225.

2147. A medal upon the Peace of Aix-la-Chapelle, in 1748. Legend : Sanandis Emropa Vulneribus Farina Cat., Frankfort, 1893, No. 2060.

2148. Obverse. Head of Archduke Franz Carl of Austria, to left. (By J. M. Scharff.)

Reverse. An angel leading a blind man. Legend : Blinde Werden Sehend. Silver. 29. 45 mm.

Helbing Cat., 1891, No. 367.

Several medals of Moses, the Hebrew sanitarian, have been given ; to these may be added :

2149. Obverse. Moses striking water from the rock. Beneath : Moses. Virga. Prodvxit | Aqvam·De·Petra· (etc.)

Reverse. Two men at a fountain. Beneath : Qui·Vero· Biberit·Aqua | (etc.) Silver. 29. 47 mm.

Hess Cat., October 16th, 1893, No. 122.

There are a number of medals commemorating the recovery of noted persons from illness, of which the following may serve as an instance.

2150. Obverse. Bust, to left, with pectoral cross. Beneath : Francke F. Inscription : Ferdinandus Augustus Archiepiscopus Coloniensis | Nat. MDCCLXIV Dec. XXV (rosette) Cons(ecratus). MDCCCXXV Jun. XI

Reverse. Between palm leaves crossed above and below, entwined with ivy and tied by ribbon : Sanitati | Restituto | Laeta | Dioecesis | MDCCCXXXIII Silver, bronze. 25. 40 mm. Garthe Cat., Cologne, 1884, No. 5364. In my collection.

2. *Water Supply.*

SOUTH AMERICA. *Argentine Republic.*

2151. Obverse. Two river gods, with water-works in background. Inscription : Republica Argentina | Director. Emilio Castro | Ingeniero—Juan Coghlan | Diciembre De 1869

Reverse. In field : Gobernador (etc., etc.) Inscription : Provision De Agua Filtrada A La Ciudad De Buenos Aires | Decreto Del Gobierno—Diciembre 23 De 1867.

Rosa, *Monetario Americano*, p. 527, fig.

2152. Obverse. A fountain. Exergue : Buenos Aires | 1868

Reverse. Inauguracion | De Las | Aguas Filtradas | Diciembre | De | 1868. Bronze. 18. 27 mm. In the collection of the American Numismatic and Archæological Society.

ENGLAND.

2153. Obverse. Crowned bust, to left. Inscription: Henricus III. D. G. Ang. Et Hib. Rex.

Reverse. Within circle: 1237 Water | Conveyed To | London By Pipes | (etc.) Thomason D. Lead.

Spink & Son, *Num. Circular*, September, 1893, p. 365, No. 17.

2154. Obverse. A man with two buckets. Inscription: Spring. Water. At. The.

Reverse. A horse and cart. Inscription: Condvit·By. Long.Acre (Previous to 1700.) *Ibid.*, September, 1893, No. 8490[2].

GERMANY.

2155. Nuremberg. 1687. Fountain and inscription. Bronze, silvered. 23. 36 mm.

Helbing Cat., 1894, No. 3481.

Restoration of fountain at Nuremberg, 1824.

2156. Obverse. Bust of Max Joseph I. (By Losch.)

Reverse. View of the fountain. Silver, bronze. 29. 47 mm. Merzbacher, Sammlung, etc., 1883, No. 805.

SWITZERLAND.

2157. Introduction of water at Neufchâtel, 1857. (By Landry.) Stroehlin Cat., 1892, No. 1158.

2158. D° D° 1867. (By Landry.) *Ibid.*, No. 1156.

2159. D° D° 1887. *Ibid.*, No. 1133.

3. *Bathing.*

FRANCE.

2160. Obverse. The god of the Seine, with flowing urn. In background a water-wheel, steam-pump, and floating bath-

house. Legend: Ex Utilitate Decus Exergue: 1824. | Panisset Inv.

Reverse. Il A Été Construit | En 1824 | Sur La Seine A Paris | Des Établissemens D'Utilité | Et De Salubrité Publique | Par Les Soins | De M^r^ Le C^te^ Chabrol De Volvic | Préfet Du Dep^t^ | Et De M^r^ Delavau | Préfet De Police Bronze. 26. 40 mm.

GERMANY.

2161. Hamburg Schwimmverein. Bronze. 23. 35 mm. Hess Cat., May 8th, 1893, No. 835.

Island of Rügen, Pomerania.

2162. Obverse. Head, to right. Inscription: Friedrich Deutscher Kaiser Konig V. Preussen*

Reverse. Within beaded circle: A. G. Inscription: Ostseebad Binz | Rügen* Brass. 13. 21 mm. Edges milled. In my collection.

AUSTRIA.

2164. Obverse. Head, to right. Beneath: J. Schwerdner. Inscription: * Joseph Schindler * | Gräfenberg Am 30. Juli 1876

Reverse. Hygieia, with staff of Æsculapius in right hand, points with left to a spring issuing from rocks, upon which an oak branch. Inscription: Dem Würdigen Nachfolger Des Unsterblichen Vincenz Priessnitz Als Erinnerung Seines 25 Jährig. Jubiläums* Bronze. 34. 53 mm. Donebauer, *Böhmische Münzen*, p. 391, No. 3733.

ITALY.

2165. Obverse. Bust, to right. Inscription: Clem·XI· Pont·M·An·XIV.

Reverse. A bathing-place. Inscription: Ecclesia·Et· Domibvs·A.D·Balnea·Nvcerina·Constrvc.MDCCXIV. Spink & Son, *Num. Circular*, December, 1893, p. 508, No. 11,206.

Dr. Antonius Musa, of Rome, physician to the Emperor Augustus, about 40 B.C., is said to have first employed cold

bathing for the treatment of disease. He is thus commemorated.

2166. Obverse. Bust, to right. Inscription: Pius IX Pont. Max Anno II.

Reverse. Statue. Inscription: Antonius Musa Acad. Med. Chir. Ferrarien. (etc.) 1847. Bronze. 27. 43 mm. Corsi Cat., No. 5103.

(*To be continued.*)

MEDICAL EXCERPT.

By T. P. Corbally, A.M., M.D.

Pulmonary Tuberculosis — its Premonitory Symptoms. M. E. Destrée has recently remarked (*La France Médicale*, May 11th, 1894) that inequality of the pupils, without known cause, is often found in the course of pulmonary tuberculosis. This phenomenon, which does not exist in the pneumonia of the summit, nor in bronchitis with emphysema, but is observed in cases of old chronic pleurisy, possesses therefore a certain diagnostic value.

In order to estimate the true mechanism of this phenomenon, Destrée has made many experiments on dogs and rabbits, and has shown that inequality of the pupil can be caused by exciting the sympathetic in its course through the thorax. Each excitement, whether mechanical or electrical, of the sympathetic in the neighborhood of the affected part of the lung induced a dilatation of the pupil on the same side.

It must be admitted, then, that the excitation in question is transmitted to the ophthalmic ganglion through the thoracic ganglion and the inferior cervical ganglion.

The results of autopsies on cases of tuberculosis afford also the explanation of the inequality in the pupil with dilatation on the side attacked during life. Very often, notably at the apex, the fibres of the pulmonary plexus are subjected to compression, and consequently to an irritation caused by the hypertrophied bronchial ganglia, which are often attacked in their turn with tuberculosis. Inversely, tuberculosis of the bronchial ganglia may be shown by this inequality of the

pupil, manifested long, even five or six years, before any other symptom is perceptible.

BENIGN TUMORS—THEIR RELAPSES, GENERALIZATIONS.—M. Berger asks (*La France Médicale*, May 11th): Have relapsing tumors the same anatomical nature as the primitive? Are there not certain points in these tumors that may present the structure as malignant tumors?

"Three months ago," he says, "I saw a young officer, twenty-four years of age, who eighteen years before had a tumor which grew on the index finger of the left hand. It was removed by amputation seven years ago. A little while afterward a new tumor appeared at the wrist, which grew slowly, and four years ago it was necessary to disarticulate the wrist and remove the whole hand. For two years after this the condition seemed perfectly satisfactory, but at that time the tumor reappeared in the interasseous space formed by the disjointing at the wrist. I made an amputation of the forearm, just above the synovial sheath of the flexors.

"I took a portion of the tumor for examination to Cornil's laboratory. The two former tumors were fibromes, the third and last was a fasciculated sarcoma."

M. Verneuil: "The question raised by M. Berger is manifold in its relations, and is described in the remarkable thesis of Ricard. There are polycistic tumors which have malignant points in their midst, even when it is a benign tumor; there is thus the association of both kinds of tumors in the one growth.

"In the case of a plurality of tumors, which recur at different ages of the individual, the tumors may be of an entirely different nature. At fifteen years of age we may find an adenoma; at thirty years, a fibroma; and at fifty years, a cancer. As to relapses under the same anatomical form, they may be found quite frequently. I may mention the case of a patient who had three relapses of a pure fibroplastic tumor in twenty-seven years.

"I have in my notes on the succession of cancers a case in which the patient had been operated on thirty years before for an epithelioma of the breast, by Professor Ch. Robin, which returned under the same form of epithelioma in the same breast."

M. Routier: "I was called to see a patient who had an ulcerated spot on the margin of the anus, who at the end of three years had an epitheliomatous tumor in the glands of the groin, which were removed. Two years later the relapsing tumors of the glands in the groin were removed. This present year I have seen the patient again, who has now an enormous tumor of the rectum, which is, hystologically, an epithelioma, while the specimens examined several years ago were regarded, from their microscopical appearance, as having the characteristics of what is clinically set down as a syphiloma. Was there in this case a transformation, or is it the same tumor which presented, from the beginning, epitheliomatous points which would seem to be indicated by the condition of the ganglia in the groin?"

M. Quenu: "Conjunctive tumors, whether they be fibromes or sarcomes, as M. Verneuil has remarked, are tumors of the same nature. There is no such thing as a benign nor a malignant tumor. There is a development or evolution corresponding with the different forms (modalités) of development. They are tumors of the same nature, benign or malignant, according to the mode of evolution, and not according to the hystological development."

M. Kirmisson supports the same views, and recalls the fact that M. Verneuil, in 1853, published a memoir for the purpose of demonstrating this identity of the tumors having their origin in the cellular tissues, as fibrome, sarcome, etc.

URETHRAL CALCULUS AND CONGENITAL PHYMOSIS.—Dr. Dum. Popescu reports (*Spitalul*, Bucuresci, April 15th) the following case: The patient was a child seven years old, who was received into the hospital for a malarial fever which was found to be a quartan ague. During the fourth day in the hospital the child was seized with a sudden suppression of urine. On passing a sound a calculus was found to obstruct the membranous portion of the urethra. External urethrotomy was performed, and the stone, which was found to consist of uric acid and was the size of a bean, was removed. The wound was closed with suture. On the fourth day after the operation the case was complicated by an attack of influenza, which caused a delay of the cicatrization of the wound.

Dr. Reutzoin stated that in several instances he found the coexistence of calculus of the urethra with congenital phymosis. The doctor has concluded from these facts that there is a causative relation between arrests of development and defects of nutrition, and that this case must be regarded not simply as a coincidence, but as the consequence of a congenital predisposition.

ANOMALY OF THE CEREBRAL ARTERIES, followed by hemorrhage into the left optic layer. Dr. Manlicatide reports (*Spitalul*, April 15th) the case of a young soldier, aged twenty-two years, who suddenly lost consciousness, and was affected with hemiplegia and hemianesthesia of the right side. At the autopsy, atrophy of the right side was found in the hexagon of Willis, which was supplied by the left side. Effusion was more or less extensive in the left hemisphere of the brain. Hemorrhage into the posterior half of the left optic layer and effusion of blood into the middle ventricle. The anatomical changes must account for the hemorrhage, otherwise inexplicable in a person so young and without arterial lesions. The clinical phenomena in relation with the lesions were hemianesthesia of the opposite side; dilatation of the pupil of the eye corresponding with the lesion; hemiplegia due probably to some cerebral lesion not fully appreciated of the cerebral peduncle, and also the deviation of the eyes, depending probably on a lesion in the vicinity of the corpora quadrigemina.

ODONTALGIA IN THE ARMY OF THE ARGENTINE REPUBLIC, 1893. Mario Capdevila publishes in the *Boletin Mensual de la Sociedad de Sanidad Militar*, Buenos Ayres, February, 1894, the following curious details:

There were treated 712 cases among the different military grades as follows:

General, 1; colonels, 3; lieutenant-colonels, 5; majors, 12; captains, 18; lieutenants, first, 21; second, 15; ensigns, 11; soldiers of all ranks, 626; total, 712.

Classification by service:

Of infantry, 248; cavalry, 84; artillery, 37; invalids, 9; national guards, 24; sanitary corps, 46; military hospital,

central, 207; others, 42; in the navy, 8; prefecturas maritimas, 7.

Classification by diagnosis:

Alveolar abscess, 15; abscess of maxillary sinus, 6; caries, first grade, 63; *id.* second grade, 21; *id.* third grade, 47; *id.* fourth grate, 116. Salivary concretions, 8; denuding of the teeth, 4; exostasis, 12; erythematous stomatitis, 14; erythematous ulcero-membranosa, 6; epulis, 12; various erosions, 24; gingivo-cutaneous fistula, 12; mercurial gingivitis, 8; glossitis, 2; hyperthrophy of the gums, 7; luxations of the teeth, 1; necrosis of the teeth, 27; necrosis of the superior maxillary bone, 15; *id.* of the inferior, 11; toothache, 32; acute periostitis, 38; chronic, 45; polipi of gums, 20; *id.* of the flesh, 19.

The operations performed were as follows:

Chemical abrasions, 10; physical abrasions, 15; extraction of teeth, 844; plugging with gutta-percha, 84; with silver, 43; with oxide of zinc, 45.

TYPHOID-FEVER TREATED WITH NAPHTHOL β.—M. Petresco also presented another note to the Congress, in which he says (*La France Médicale*):

"Stimulated by the labors of M. Bouchard, the learned Professor of Therapeutics and General Pathology in the Faculty of Medicine in Paris, I commenced in January, 1888, to treat all my patients having typhoid with naphthol β either alone or associated with sulphate of quinine. The former I used in three-quarter grain doses daily, and the second, in one-half grain. At the same time I gave to all my patients, as a drink, instead of water, a lemonade prepared with benzoate of soda, five per cent, or of benzoic acid, one half per cent. In the same way, in all cases of grave ataxo-adynamic conditions, I added to this antiseptic medication hydrotherapeutic applications by means of wet sheets.

"From 1888 to the present time I have treated, by this antiseptic medication, 647 cases of typhoid-fever. From the results obtained in all the cases, I am justified in drawing the following conclusions:

"1. Typhoid-fever, if treated from the incipient stage, may be very much modified or even aborted.

"2. The therapeutic dose of naphthol β is three quarters of a grain a day, given in twelve capsules. One capsule every hour. This dosage should be repeated every day until the disease is cured.

"3. The treatment of typhoid-fever with naphthol β, followed from the beginning of the disease, arrests, in every case, the phenomena of auto-intoxication or secondary infection. The disease follows its natural course of development —cyclic—without presenting the series of febrile phenomena of auto-intoxication and of excessive waste—*autophagie exagerée*— or of any other complication from secondary infection."

TYPHOID-FEVER—ITS ABORTIVE TREATMENT.—It is believed that the following communication, made to the Congress by M. Sanchez Herrero, of Madrid (*La France Médicale*), will be of interest.

Dr. S. Herrero thinks that the agents which form the virus of typhoid are not all of the same kind, and that they enter the system through different channels. Like Peter, he admits of a self-infection—*auto-typhization*—a typhoid infection of intestinal origin.

This condition being established, the important principle of treatment is to disinfect the intestines. This disinfection Señor Herrero has obtained by uniting oleum ricini with spirits of turpentine, according to the following formula, which is slightly modified from Graves:

℞ Oleii ricini..... 30 grammes.
Essent. terebenthinæ..... 10 "
To form one dose to be taken in the morning, fasting.

This mixture produces free evacuations, which are very fœtid, numbering three to five in twenty-four hours, and are followed by a lower temperature, which soon reaches the normal and remains such for some time. The patient is much improved, and even asks for food. This amelioration is prolonged for two or three days by giving iodoformed charcoal, according to the formula of Hayem, and giving every evening a gramme of sulphate of quinine.

In all the cases in which the treatment was commenced during the first five days of the disease, convalescence was established before the tenth day.

MORTALITY AND MORBILITY STATISTICS.

By HARRY KENT BELL, M.D.

ALABAMA.—Jerome Cochrane, M.D., State Health Officer, Montgomery.

Mobile, 31,076: T. S. Scales, M.D., Health Officer, reports for the month of April a mortality of 61, of which 31 were colored, and 25 were under five years of age. The annual death-rate per 1000 was 22.52.

Zymotic diseases caused 5 deaths, and consumption, 12.

ARKANSAS.—D. W. Holman, Secretary, Little Rock.

CALIFORNIA.—J. R. Laine, M.D., Secretary, Sacramento.

For the month of April the reports from 86 cities, towns, villages, and sanitary districts, aggregating a population of 893,453, show a mortality of 1118—a death-rate of 15.00 per 1000 per annum.

There were 210 deaths from consumption, 101 from pneumonia, 36 from bronchitis, 14 from congestion of the lungs, 89 from diseases of the stomach and bowels, 23 from diphtheria and croup, 3 from scarlatina, 7 from whooping-cough, 8 from typhoid-fever, 9 from *la grippe*, and 518 from other causes.

Reports of prevailing diseases from 55 localities, outside of the larger towns and cities, give 48 cases of pneumonia, 152 of bronchitis, 45 of pleurisy, 17 of congestion of the lungs, 141 of diarrhœa, 43 of dysentery, 18 of cholera morbus, 9 of cholera infantum, 43 of diphtheria and croup, 24 of scarlatina, 38 of measles, 115 of whooping-cough, 179 of *la grippe*, 8 of typhoid-fever, 209 of malarial fevers, 4 of cerebro-spinal-fever, 25 of erysipelas, 129 of rheumatism, 102 of neuralgia, 152 of tonsilitis, and 75 of pharyngitis.

CONNECTICUT.—Professor C. A. Lindsley, M.D., Secretary, New Haven.

Reports of mortality for the month of April were received from 165 towns in the State, aggregating a population of 795,516.

There were 1100 deaths reported in the State during the month. This was 110 more than in March, and 295 less than in April, 1893, and 89 less than the average number of deaths in April for the five years preceding the present.

The death-rate was 16.7 for the large towns, for the small towns, 16.1, and 16.5 for the whole State.

The deaths from zymotic diseases were 122, being 11.0 per cent of the total mortality. There were 117 deaths from consumption.

DELAWARE.—E. B. Frazer, Secretary, Wilmington.

DISTRICT OF COLUMBIA, 250,000: C. M. Hammett, M.D., Health Officer, reports for the four weeks ending May 26th a mortality of 384, of which number 186 were of colored people, and 107 were under five years of age. The annual death-rate was 17.5 per 1000. There were 48 deaths from zymotic diseases, and 66 from consumption.

Investigation of Tuberculosis.—The House has passed a bill appropriating $100,000 for this purpose. It is not intended at present to attempt an extermination of the pest. So few of its phases are known, that this would be a step in the dark. The present purpose is to collect information about its spread and the means for controlling it. Then an additional amount may be asked for to kill it. The fact that herds have been found in which as many as 60 or 75 per cent were infected has made the farmers and stock-raisers generally very cautious, and has hindered the trade in certain localities where such infection is known to exist.

The investigations will be carried on in Washington, and will affect those dairies from which the local milk supply comes. The District Board of Health will assist. A list of over 500 herds has been made, all of which are within a radius of 30 miles of the city, and operations will be begun as soon as the $100,000 becomes available. One herd of 135 animals was found to have 90 diseased cows. Tuberculin has been furnished 23 States, and over 1000 blanks have been returned,

which will be used by Dr. Salmon for a special bulletin shortly. Of these blanks returned, 500 came from Vermont and 200 from Massachusetts.

FLORIDA.—Joseph Y. Porter, M.D., Secretary, Jacksonville.

The summary, as published in *Florida Health Notes* for the month of March, is as follows :

Number of counties reporting, 45 ; number of cities reporting, 3 ; total population of said counties and cities, 391,422 ; number of births reported, 518 ; number of marriages reported, 449 ; number of deaths reported, 292 ; birth-rate per 1000 per annum, 15.28 ; death-rate per 1000 per annum, 8.45 ; average age of decedents, 29.58 ; number of deaths under five years of age, 86. Deaths from zymotic diseases numbered 38, and from consumption, 36.

The Board has recently adopted several amendments to its rules, among them :

" That whenever the sanitary agent of the State Board of Health for any county shall report to the State Board of Health, that the municipal authorities of an incorporated city, or the county commissioners of any county of the State, refuse or fail to abate any nuisance prejudicial to the public health, it shall be the duty of the State Health Officer, as soon as practicable, to visit said locality and inspect the same, and, after consultation with the president of the Board, to take such measures as may in their judgment be necessary either to immediately abate the cause of the trouble or to prosecute, in the proper courts, with the assistance of its prosecuting officers, the municipal or county authorities responsible therefor, and their action shall be reported to this Board as promptly as practicable.

" No draining of low lands or excavations of whatever character, or grading of streets, shall be made between May 1st and November 15th of any year, in any incorporated city or town nor in any unincorporated town or settlement without the permission of the State Board of Health ; provided that this is not intended to interfere with the ordinary cultivation of land in farming, the burial of the dead, nor the digging of wells, where necessary and there is no water system.

"No human remains shall be disinterred or removed from any place of interment in this State, or brought into or carried through this State for burial without permission of the State Board of Health.

"It is hereby made the duty of all mayors of towns and cities in this State, and of the Board of County Commissioners, to enforce the observance of all the foregoing rules and regulations of the State Board of Health in the several cities, towns, and counties under their control."

The penalty for a violation of any of the rules is a fine of not less than $100 or more than $1000, or imprisonment in the county jail of not less than one month nor more than six months.

ILLINOIS.—J. W. Scott, Secretary, Springfield.

Auxiliary Work.—Pursuant to a call by the Secretary, about one hundred local health officers from all parts of the State met in the Senate Chamber May 24th, for the purpose of united effort to secure more uniform and efficient sanitary ordinances in cities and towns, better measures for the prevention of disease and the co-operation of the local health authorities with the State Board of Health. A permanent organization was effected under the name of the Illinois State Board of Health Auxiliary Sanitary Association. The following officers were elected: President, Dr. W. E. Quine; Secretary, Dr. J. W. Scott; Treasurer, Dr. G. N. Kreider, of Springfield, with one vice-president from each Congressional District. A Committee on Legislation, with Dr. J. A. Vincent, of Springfield, as Chairman, was appointed. The model form of health ordinance recommended by the State Board of Health was indorsed, and the delegates pledged themselves to use all efforts to have it adopted in their respective communities.

Chicago, 1,600,000: A. R. Reynolds, M.D., Commissioner.

There were 2134 deaths reported during April, of which number 900 were under five years of age. The annual death-rate reported was 16.00 per 1000. Deaths from small-pox caused 157; croup and diphtheria, 64; typhoid-fever, 30; measles, 23; cerebro-spinal-fever, 20; scarlatina, 18; other zymotic diseases, 90—312. Deaths from consumption, 200; acute diseases of the lungs, 415.

Small-pox is under control, said the Health Commissioner May 19th; and in review of the work that had been done during the preceding three weeks: "We have built hospital accommodations for 700 persons, have put a force of 400 men at systematic work, and have the pest under control," he said. "Yesterday there were but eight cases. Our men have turned up every case in the city I am certain, and with few exceptions every affected person is in the hospital. From now on there will be a decrease in the number of cases. I do not mean to say there will be no cases. We may have some days as high as fifteen, but there will be few days in which we will have more than that. We will have cases all summer, but not epidemic."

INDIANA.—C. N. Metcalf, M.D., Secretary, Indianapolis.

IOWA.—J. F. Kennedy, M.D., Secretary, Des Moines, reports in the *Monthly Bulletin* for the month of April:

Council Bluffs, 30,000: Total deaths, 17. Annual death-rate, 5.76 per 1000.

Davenport, 34,000: Total deaths, 34. Annual death-rate, 12.00 per 1000.

Des Moines, 74,647: Total deaths, 96. Annual death-rate, 13.50 per 1000.

Dubuque, 40,000: Total deaths, 30. Annual death-rate, 9.00 per 1000.

KANSAS.—M. O'Brien, M.D., Secretary, Topeka.

KENTUCKY.—J. N. McCormack, M.D., Secretary, Bowling Green.

LOUISIANA.—W. R. Harnan, M.D., Secretary, New Orleans.

The Board of Health is active in the endeavor to have several bills passed in the Legislature relative to the regulation of dairies, inspection of cattle, and vital statistics.

New Orleans, 254,000—184,500 white, 69,500 colored. There were reported for four weeks ending May 19th, 540 deaths, of which number 235 were among the colored people,

and 229 of children under five years of age. There were 113 deaths due to zymotic diseases, and 70 to consumption. The annual death-rate was 33.19 per 1000.

MAINE.—A. G. Young, M.D., Secretary, Augusta.

MARYLAND.—James A. Steuart, M.D., Secretary, Baltimore.

Baltimore, 455,427: James F. McShane, M.D., Commissioner, reports for April that the total deaths were 692, a decrease of 162, compared with the corresponding month of April, 1893. Of these 529 were whites and 163 colored; a death-rate of 16.53 per 1000 for the former and 27.54 per thousand for the latter. The death-rate per 1000 for the whole population was 18.25; 36 died from infectious diseases, 79 from consumption, 86 from pneumonia, 23 from bronchitis, 10 from influenza, and 26 from Bright's disease; 200 or 28.90 per cent of the total deaths were in children under five years of age.

During the month 150 cases of infectious diseases were reported, a decrease of 3 compared with the preceding month.

MASSACHUSETTS.—S. W. Abbott, M.D., Secretary, Boston.

Boston, 487,397: S. H. Durgin, M.D., Chairman.

There were 940 deaths reported in April, of which number 296 were under five years of age. The annual death-rate per 1000 was 23.14. There were 126 deaths from zymotic diseases, and 125 from consumption.

MICHIGAN.—Henry B. Baker, M.D., Secretary, Lansing.

For the month of May, 1894, compared with the preceding month, the prevailing direction of the wind was northwest (instead of northeast), the velocity was slightly greater, the temperature was 8.43° higher, the rainfall at Lansing was 3.21 inches more, the absolute and relative humidity and the day and night ozone were much more, and the depth of water in the well at Lansing was two inches more.

For the month of May, 1894, compared with the preceding month, influenza and pleuritis decreased in area of prevalence.

Compared with the average for corresponding months in

the eight years 1886-93, the prevailing direction of the wind was northwest (instead of southwest), the velocity was one mile per hour greater, the temperature was slightly lower, the rainfall at Lansing was 2.62 inches more, the absolute and relative humidity were more, the day ozone was less, the night ozone was more, and the depth of water in the well at Lansing was two inches less in May, 1894.

Compared with the average for corresponding months in the eight years 1886–1893, scarlet-fever was more prevalent and remittent-fever, intermittent-fever, and pleuritis were less prevalent in May, 1894.

Including reports by regular observers and others, consumption was reported present in Michigan in the month of May, 1894, at two hundred and twenty places; measles at one hundred and thirty places; scarlet-fever at one hundred and eight places; diphtheria at seventy-two places; typhoid-fever at thirty places, and small-pox at seven places.

Reports from all sources show consumption reported at the same number of places as in the preceding month; measles at fifty-five places more; diphtheria at eleven places more; typhoid-fever at two places less; scarlet-fever at ten places more, and small-pox at one place more in the month of May, 1894, than in the preceding month.

Detroit, 275,000: Duncan McLeod, M.D., Commissioner. There were 313 deaths reported during April, of which number 112 were under five years of age. The annual death-rate per 1000 was 13.85. There were 18 deaths from zymotic diseases, and 24 from consumption.

MINNESOTA.—C. N. Hewitt, M.D., Secretary, Red Wing.

For the month of March there were 865 deaths reported in a total population of 948,942, representing an annual death-rate of 11.09 per 1000.

The principal causes of deaths were tuberculosis, 130; diphtheria and croup, 36; pneumonia, 65; bronchitis, 28; typhoid-fever, 30; scarlatina, 20; diarrhœal diseases of children, 15.

St. Paul, 155,000: H. F. Hoyt, Commissioner. The mortality for April was 130, of which 55 were of children under five years of age. The annual death-rate was 9.98 per 1000. Zymotic diseases caused 12 deaths, and consumption, 12.

MISSISSIPPI.—Wirt Johnson, M.D., Secretary, Jackson.

MISSOURI.—R. C. Atkinson, M.D., Secretary, St. Louis.

St. Louis, 540,800: George Homan, M.D., Commissioner.

Privileged to Keep Foul Water.—At a recent meeting of the Board some discussion ensued relative to the closing of wells that had been condemned, and it was decided that if an owner would agree to keep a condemned well locked, and display a placard in the English and German languages warning the public that the water was impure, that the well need not be filled up!

NEBRASKA.—F. D. Haldeman, M.D., Secretary, Ord.

NEW HAMPSHIRE.—Irving A. Watson, M.D., Secretary, Concord.

NEW JERSEY.—Ezra M. Hunt, M.D., Secretary, Trenton.

Seventh Annual Report for the year ending June 30th, 1893, and the fifteenth report of the Bureau of Vital Statistics, a volume of six hundred pages. Cholera, typhus-fever, small-pox, and diphtheria were the threatening enemies at the beginning of the year, but they appear to have been anticipated by such sanitary measures (in New York), that the two former, from foreign sources, with but a single exception, were wholly escaped. Not so, however, the latter—from domestic sources, and consequently much less feared—these were unusually prevalent.

Vaccination in New Jersey, as elsewhere in this country, is neglected alike by the people and the sanitary authorities, until they are aroused from their lethargy by the outbreak of small-pox. And so, too, it is with diphtheria: nuisances of one kind or another are tolerated by the people and neglected by the health authorities, until their fruitfulness as culture beds for disease germs is made manifest by the outbreak of the disease, and *then* they are "inspected," but not always abated. This practice is by no means peculiar to New Jersey. It is common to the health service throughout the country, tolerating the causes and dealing with the consequences. Apropos Woodbridge: "In December, 1892, there was an

outbreak of diphtheria that resulted in five deaths. A thorough examination was made by the Health Board in the house where it originated. The family was removed. An examination of the premises revealed a foul drain in the cellar, from which arose a foul odor. The house was thoroughly fumigated, the beds and bedding burned, as was also the clothing used in the house, and no new cases occurred."—Hopewill: "March 1st, 1893, attention of the Board was called to sickness existing in a tenement house situated near the Raymond Rubber Works, Titusville, N. J., which proved to be typhoid-fever of a low type. The premises, also those adjoining, were placed under strict quarantine until all danger of further trouble was over. Five patients were found, two women and three men; one of each succumbed to the disease; were interred privately during the night. The premises throughout were thoroughly cleansed and disinfected.

"The quarantine was raised and occupants released on March 18th. From facts obtained by this Board the impression was that germs of said disease were carried from New York City by a Scotchman who secured accommodations in said house, where overcrowding and filth existed.

"The water from a well situated on said premises and used by its occupants, on examination, showed animal matter in great quantities, which was at once condemned and the well ordered cleaned thoroughly, which order, after some delay (through obstinacy), was executed." No other cases occurred.

But no one has a keener appreciation of the relation of such conditions to the results, as illustrated by the two examples cited, than the Secretary of the State Board of Health of New Jersey. That they are common in that State, as elsewhere, is due to legislative obtuseness and parsimony. Small-pox will doubtless continue to occur as the result of neglected vaccination; and no less certainly diphtheria, typhoid-fever, and other contagious and filth diseases, as the result of polluted water, soil, and air. To prevent such conditions appropriations are as necessary as sanitary officers.

Besides a full account of the work of the State Board and of the local boards in relation with it, the volume comprises several reports and papers on special subjects—"Thoughts for Sanitary Workers," "Sewerage and Sewage Disposal,"

"Examination of Water Supplies," etc., circulars and laws, all of practical utility.

Vital statistics for the year ending July 1st, 1893:

Population (1890), 1,444,933: Marriages (including 4073 non-residents), 17,178; births (exclusive of 1877 still-births), 32,285; deaths, 30,596. Deaths from diarrhœal diseases of children, 3981; acute lung diseases, 3974; consumption, 3429; adult brain and spinal diseases, 2611; diseases of heart and circulation, 2179; adult digestive and intestinal diseases, 1753; brain and nervous diseases of children, 2072; diphtheria and croup, 1677; renal and cystic diseases, 1441; cancer, 723; typhoid-fever, 506; scarlatina, 445; puerperal-fever, 282; whooping-cough, 237; remittent-fever, 148; acute rheumatism, 102; erysipelas, 74; measles, 73; small-pox, 43.

NEW YORK.—J. S. Barnes, M.D., Secretary, Albany.

The reported mortality for April represents a daily average mortality of 320, which is less than that of March (329), the average for the three preceding months being 340. This represents a lessened mortality of 600 for the month compared with the average of the three preceding months, and 270 less than in March. There were 57 deaths per day from acute respiratory diseases to 60 in March and 100 during the preceding three months. Deaths from diseases of the digestive system were also fewer; but from other local diseases there is not much variation from March. The epidemic of *grippe*, commencing in December, has entirely ceased. There were 100 fewer deaths from accident and violence. The total mortality is but little greater than the average for April for the past nine years; it is very much less than that of April, 1892 and 1893, in both of which *grippe* epidemics were at their height. From zymotic diseases there were 1345 deaths, a few less than in March; in none of them is there any material increase. Typhoid-fever caused 94 deaths (131 in March); from diphtheria there were fewer deaths; scarlet-fever shows little variation, as also measles and whooping-cough, both the latter being limited for the most part to the maritime and Hudson Valley districts. Small-pox caused 54 deaths, of which 47 occurred in the maritime district, 5 in the Albany penitentiary, 1 in Coxsackie, and 1 in Binghamton. A new case is

reported from Utica, 1 from Waterville, Oneida County; from Perrinton, Monroe County, 3 cases in one family; from White Plains, 1 case; from Albany, 5 cases, originating in three localities, 1 new case being reported from the penitentiary; the disease is diminishing in New York and Brooklyn. There is no material spread of this disease at any point. Consumption caused 1091 deaths, which is less than usual. The weather for the month was fair, with a slight deficiency of rainfall and an average temperature above the normal.

New York, 1,925,569: Total deaths, 3570—1524 under five years. Death-rate, 22.55. Zymotic diseases per 1000 deaths from all causes, 176.00. Deaths from consumption, 368.

Tenement Population.—Dr. Roger S. Tracy, Deputy Register of Vital Statistics, has just completed the semi-annual census of the tenement-house population in New York City. The report, which was presented to the Board of Health, June 18th, shows that the total tenement-house population in New York is 1,332,773. The total number of tenement houses is 39,138. Of this number there are 2346 rear houses. There are living in tenement houses 1,152,414 persons who are five years old and more; under five the total is 180,359. There is a total population of 56,130 in rear tenement houses. Of this number 47,346 are five years and more and 8784 under five years. The Twelfth Ward contains the largest tenement-house population, the number being 252,331. The smallest number is in the Second Ward, where there are only 175 persons. The population by wards is:

First Ward, 7565; Second Ward, 175; Third Ward, 1548; Fourth Ward, 14,920; Fifth Ward, 6933; Sixth Ward, 20,245; Seventh Ward, 565,578; Eighth Ward, 20,354; Ninth Ward, 41,676; Tenth Ward, 68,383; Eleventh Ward, 77,698; Twelfth Ward, 252,331; Thirteenth Ward, 43,577; Fourteenth Ward, 25,738; Fifteenth Ward, 9892; Sixteenth Ward, 33,586; Seventeenth Ward, 103,190; Eighteenth Ward, 39,894; Nineteenth Ward, 196,656; Twentieth Ward, 80,499; Twenty-first Ward, 47,585; Twenty-second Ward, 140,571; Twenty-third Ward, 32,946; Twenty-fourth Ward, 1233.

The Twelfth Ward has the most tenement houses—7702. There are only 8 in the Second Ward.

Brooklyn, 1,003,781 : Total deaths, 1658—650 under five years. Death-rate, 20.13. Zymotic diseases per 1000 deaths from all causes, 155.60. Deaths from consumption, 183.

Syracuse, 91,944 : Total deaths, 123—33 under five years. Death-rate, 16.10. Zymotic diseases per 1000 deaths from all causes, 22.50. From consumption, 23.

Albany, 98,000 : Total deaths, 199—52 under five years. Death-rate, 22.20. Zymotic diseases per 1000 deaths from all causes, 175.00. From consumption, 24.

Buffalo, 300,000 : Total deaths, 434—127 under five years. Death-rate, 17.36. Zymotic diseases per 1000 deaths from all causes, 129.00. From consumption, 45.

Rochester, 150,000 : Total deaths, 154—33 under five years. Death-rate, 12.68. Zymotic diseases per 1000 deaths from all causes, 84.50. From consumption, 24.

NORTH CAROLINA.—Richard H. Lewis, M.D., Secretary, Raleigh.

From the *Bulletin* of the North Carolina Board of Health we find that during April there were 152 deaths in 29 towns, aggregating 147,154 population ; 85 were of colored people, and 51 were of children under five years of age.

The annual death-rates were 9.3 per 1000 for the white population, 16.9 for the colored population, and 12.4 for the total. There were 36 deaths from consumption, 3 from typhoid-fever, 6 from pneumonia, and 16 from diarrhœal diseases.

Asheville, 12,000 : Total deaths, 16. Annual death-rate, 16.0 per 1000.

Charlotte, 14,000 : Total deaths, 26. Annual death-rate, 20.8 per 1000.

Raleigh, 15,000 : Total deaths, 19. Annual death-rate, 15.2 per 1000.

Wilmington, 22,000 : Total deaths, 32. Annual death-rate, 17.4 per 1000.

NORTH DAKOTA.—F. H. DeVaux, M.D., Superintendent, Valley City.

OHIO.—C. O. Probst, M.D., Secretary, Columbus.

Cincinnati.

Milk Supply.—A recent investigation of the milk supply showed that milch cows and beef cattle were very commonly fed upon distillery waste and slop from starch factories, without regard to the wholesomeness of the milk and beef. The milk dealers, cattlemen, and butchers defended the practice, claiming that the milk showed no difference from that of the dry-fed cow in the analysis. They held the beef to be sweeter than that of the dry-fed cattle, in greater demand on the market, but not so solid.

Proof was made that distillery waste was used universally in the feeding of milch cows, not as a sole food, but in conjunction with other foods, but hardly in the quantities given by the feeders immediately around the distilleries of the city.

But the conditions in relation with the feeding of slop, in the immediate vicinity of the distillery, were such as to warrant their removal by the health authorities.

The Health Department, through its chief official, pronounced unequivocally against feeding of distillery waste to milch cows and beef cattle, alleging that it produced a catarrhal condition of the intestines, thus affecting the milk and meat alike, and urged the discontinuance of the practice.

OKLAHOMA TERRITORY.—J. O. Overton, M.D., Secretary, Kingfisher.

PENNSYLVANIA.—Benjamin Lee, M.D., Secretary, Philadelphia. Richard Y. Cook, of Philadelphia, has been appointed by Governor Pattison a member of the State Board of Health, vice J. F. Edwards, M.D., resigned.

Tuberculosis has been added to the communicable diseases dangerous to the public health, and local boards recommended to require returns thereof when the disease has reached the infective stage in the same manner that returns of other infectious diseases are required. It has also adopted resolutions recommending the establishment of public hospitals for the care and treatment of the consumptive poor in or near every large centre of population.

Philadelphia, 1,139,457 : M. Veale, Health Officer, reports : In the four weeks ending May 26th there were 1494 deaths,

of which number 466 were under five years of age. Annual death-rate, 17.39 per 1000. Deaths from consumption numbered 178, and from zymotic diseases, 176.

Manure Nuisance.—June 12th the Board *Resolved*, That the owners, agents, or occupants of the manure wharves, situated on the Schuylkill River front, east of the Schuylkill River East Side Railroad, be notified to remove within ten days all deposits of manure now on said wharves."

Vaccination War.—Notwithstanding the devastating epidemic of small-pox in Philadelphia, a few years ago, which cost the city millions of dollars, the Board of Education recently adopted a resolution annulling all action taken by them heretofore for the enforcement of their own rule prohibiting attendance upon public schools of all children who are not vaccinated.

The Board of Health called the attention of the Board of Education to this evasion of a rule of long standing and sought to have it enforced, and proffered the aid of the entire corps of vaccine physicians for determining what children were debarred by this regulation, and for vaccinating gratuitously, either in the schools or at their homes, all children who, with the cónsent of their parents, would have the operation performed. And

Resolved, That the Board of Public Education be urgently requested, for the good of the public and the fair reputation of the city, to rescind the recent action of their joint committee, or at least direct that no child shall be admitted to the public schools at the commencement of the fall term who has not already presented a certificate of successful vaccination or who does not furnish such certificate, and for the furtherance of this most important object the Board of Health extends to them their full and hearty co-operation.

Pittsburg, 264,000: J. Guy McCandless, M.D., Registrar, reports: During the four weeks ending May 26th there were 354 deaths, of which 137 were under five years of age. Annual death-rate, 16.93 per 1000. Zymotic diseases caused 47 deaths, and consumption, 36.

A Call for Cleanness.—The Rev. L. C. Barnes, in a recent sermon, asks: "Why should any man who can gather together a bundle of bones under the form and skin of a horse be allowed

to remove at his own sweet will garbage from the houses of Pittsburg, only to deposit it to fester for a time in some other part of the city? There is no reason why the municipality itself should not keep thoroughly clean the whole twenty-seven square miles of Pittsburg, and that without polluting the rivers or atmosphere for other neighborhoods. Woe unto thee, O Pittsburg! Thou wilt not be made clean; how long shall it yet be?"

RHODE ISLAND.—Gardner T. Swarts, Secretary, Providence.

The compulsory vaccination law was repealed by the Legislature during its recent session, but the prompt appearance of small-pox in Providence, from which city the disease has been absent for twenty years, will not probably encourage other States to follow its example. It is a severe trial for a family to see a sick member hurried away to a pest house or fever hospital on the plea that the safety of the community demands it, but when people learn that the frequency of such removals will be greatly multiplied if vaccination is neglected, they will probably become convinced of the benefit of vaccination in a two-fold sense.

SOUTH CAROLINA.—H. D. Frazer, M.D., Secretary, Charleston.

SOUTH DAKOTA.—C. B. Alford, M.D., President, Huron.

TENNESSEE.—J. Berrien Lindsley, M.D., Secretary, Nashville.

WASHINGTON.—G. S. Armstrong, M.D., Secretary, Olympia.

WEST VIRGINIA.—N. D. Baker, Secretary, Martinsburg.

WISCONSIN.—U. O. B. Wingate, M.D., Milwaukee.

Action of the Board on the Retirement of Dr. Reeve.—At a recent meeting the following preamble and resolutions were adopted:

Whereas, J. T. REEVE, M.D., being about to retire from the position of Secretary of the Wisconsin State Board of

Health, which position he has occupied since the organization of the Board, be it, therefore,

Resolved, That we, his colleagues, express our appreciation of his faithful and efficient services as executive officer of this Board, and of his meritorious and zealous labors in the cause of sanitation.

Resolved, That in our opinion the citizens of this Commonwealth are greatly indebted to Dr. Reeve for his eighteen years of untiring devotion in the work of organizing and aiding local boards of health throughout the State.

Resolved, That while we regret the loss of his invaluable services as Secretary of our Board, we rejoice in his well-earned reputation as a sanitarian, and with him in his much-needed rest, and express our heartiest good wishes for his future prosperity, happiness, and long life, hoping and trusting that his anticipated journey abroad may result in both pleasure and profit, and a safe return.

Resolved, That these resolutions be spread upon our records by the incoming Secretary, and published in the next biannual report of this Board, and that a copy, officially executed, be forwarded to Dr. Reeve.

Milwaukee, 265,000: Walter Kempster, M.D., Commissioner.

The 272 deaths during the month of May represent a death-rate of 12.32, against 17.16 for the preceding month. There were 29 cases of diphtheria with 8 deaths. There were 9 cases of typhoid-fever with no deaths. Total deaths from zymotic diseases, 38, and from consumption, 33.

PROVINCIAL BOARD OF HEALTH OF ONTARIO.—Peter H. Bryce, M.D., Secretary, Toronto.

PROVINCE OF QUEBEC.—Elzear Pelletier, M.D., Secretary, Montreal.

BUENOS AYRES, 580,371: Albert B. Martinez, Director-General of Municipal Statistics.

During the month of February there were reported 1085 deaths, of which 571 were under five years of age. The annual death-rate per 1000 was 29.0. From epidemic diseases there were 72 deaths, and from consumption, 111.

EDITOR'S TABLE.

SANITARIAN, JULY NUMBER, 1894.

☞ ALL correspondence and exchanges and all publications for review should be addressed to the Editor, DR. A. N. BELL, Brooklyn, N. Y.

TO KEEP CHOLERA AT HOME.

IF the people of India *will* have the cholera they must be required to keep it at home. This is the sense of the recent International Sanitary Conference at Paris. At a public meeting in New York, May 18th, Dr. Stephen Smith, who was a member of the Conference, said in substance, according to the newspaper reports of his remarks, that the object of the Conference was to formulate rules which, when signed by all governments, would become international laws, on the subject of controlling cholera and its sources.

Natives in India long ago believed in a "shot-gun" policy such as is in vogue in the Southern States in yellow-fever time, a policy of "non-intercourse." This proved salutary and was followed by quarantine, which, in the fourteenth century, was adopted by the Venetians because of plagues that came of their intercourse with Asiatics and Mussulmans. Their sequestration was for forty days, and the period gave the precaution its name.

Quarantine became generally popular all over the world, but England found it interfered with her commerce, and, while she was strict on her own islands, she objected to it elsewhere. But she had clean towns and an admirable sanitary system. Greece had dirty towns and no such system, and one of her delegates at the Conference aptly said: "We Greeks cannot keep our towns clean, but for forty years we have had quarantine and no cholera."

England has spent £80,000,000 in local sanitation in ten years, and the theory there seems to be: "Let cholera come; we can easily stamp it out."

The general and better sentiment, Dr. Smith said, was to unite all countries against a common enemy, and not to let person or baggage leave a port or station unless free of contagion.

France called the Conference just held, and the question if cholera could not be prevented from getting out of India appears to have been settled. It will take a year to decide on the programme, but the general scheme is as follows:

Every pilgrim must have a sanitary pass before he can travel. Such pass must establish that he is healthy, has money for himself, and has provided for the family left behind. This does away with the old and poor pilgrims, who were ready to die by the way or at Mecca.

At Bombay the pilgrim must pass the period of incubation, five days; he must be bathed and disinfected and have his clothing overhauled, and he can only embark on a pilgrim ship whose sanitation is perfect, whose regulation, attendance, surveillance, and systems of isolation and nursing meet the necessities of the plan.

At Aden, the Island of Camaran, Jeddo, and Mecca the pilgrim will encounter proper sanitary treatment and safeguards. The same rules are to apply to the other routes for pilgrims and caravans. When he returns he must have a sanitary passport and submit to constant surveillance and sanitation.

The American delegates, like some others, could not sign the rules, but accepted them *ad referendum.* A proposition to appoint an international commission to enforce the rules was adopted.

The question of regulating the movement of emigrants to the United States is under advisement, and a convention will probably be called to discuss it.

"If," said Dr. Smith, in conclusion, "rules are framed for this, cholera and other contagious diseases must stay at home."

Notwithstanding, considering the cosmopolitan nature of cholera, proportionally as other nations are forgetful of the importance of England's commerce with India—more than all the world besides—and neglectful of England's example of home sanitation for her own protection, so aptly cited by Dr. Smith, cholera will doubtless continue in the future as it has been in the past, prone to occupy congenial places wheresoever they are maintained. Indeed, it seems scarcely less at home in Constantinople, Tripoli, and at several places in Russia—where it has dwelt throughout the past winter—than in India. Besides, it has been recently reported in Belgium, Portugal, and France, whence it will probably follow the wake of travel and commerce in search of other congenial places. To effectually prevent it home sanitation is more important than quarantine. Cleanly conditions and a thoroughly protected water supply constitute an indubitable defence against cholera wherever they are maintained, quarantine or no quar-

antine. And considering the success of England's defence in these respects heretofore, we are loath to believe she will take the backward step against practical sanitation, by signing any such rules as those indicated, for the protection of those nations and peoples who are neglectful of their own home conditions.

THE PROPOSED NATIONAL HEALTH SERVICE, other than that which now obtains, appears to have made no progress during the past month. Dr. WYMAN'S address before the Committee on Interstate and Foreign Commerce, May 18th, to which we alluded in our June number, and of which we have since received a printed copy, seems to have so effectually discomfited the advocates of the Bureau bill that nothing has been heard of it since. Indeed Dr. Wyman's address shows that the elaboration of the sanitary service under his direction, as provided for in the Act of February 15th, 1893, so thoroughly comprehends all the sanitary service that the proposed Bureau bill provides for, that the change would almost wholly consist in the organization of a new bureau with inexperienced officers, and the subordination of the already thoroughly equipped service under his direction thereto. It would, in short, be the transference of the duty as at present devolved upon the Surgeon-General of the Marine Hospital Service, to make rules and regulation for the national quarantine service, to the chief of a new bureau with no practical knowledge of the requirements.

As THE SANITARIAN has repeatedly taken occasion to point out before the quarantine law of 1893 was enacted and since, that law, though comprehensive so far as maritime quarantine is concerned, lacks important provisions for a more comprehensive national health service, which should be supplied. But as Dr. Wyman clearly shows, the proposed Bureau bill does not supply them ; and considering the thoroughly satisfactory administration of the national sanitary service by the Marine Hospital Service, under its present limitations, the subject seems now to resolve itself into such needful amendments to the existing law, under the same administration, as would broaden its scope to secure the best sanitary condition of all vessels, outfits, crews, and passengers engaged in com-

merce between or departing from domestic ports; provide for co-operation with the medical services of the Army, Navy, and State Boards of Health, in emergency, or for an Advisory Counsel composed of those services.

THE PLAGUE OUTBREAK at Hong Kong recently is another evidence of what THE SANITARIAN has frequently had occasion to remind its readers, that evidence is still wanting to show that *any* germ disease that has ever appeared has ceased to exist. The outbreak of *black death* in a Russian town last year, duly noticed in these pages, and this of plague—both of diseases which even some sanitarians have been wont to consider extinct—should be regarded as admonitions against any such conclusions, and to all communities of mankind that safety from such diseases consists in eternal vigilance against the conditions which give rise to them.

TELEPHONES AND BACILLI.—Micro-organisms—the spores of fungi, bacteria, micrococci, and bacilli—of one kind or another, are everywhere to be found in the air and on the surfaces of things, animate and inanimate, exposed to the air; and on moist, warm surfaces they are generally superabundant. That the mouthpieces of telephones should be found to contain them is certainly not surprising to any one at all acquainted with the universal diffusion of microbes and their liability to be found in such places. But it is quite safe to say that the "skilled chemist," as he is called by his newspaper mouthpiece, in announcing this "latest discovery," is a good deal more dangerous to the community, by imposing on the ignorant and credulous, than the microbes he has discovered, or the telephone mouthpiece to any one who uses it. He has discovered a mare's nest, and by forcing it may hatch a specific for telephone-mouthpiece diseases.

CHARLES RIVER, Boston, which has become a nuisance on account of the factory waste and sewage discharged into it, is to be improved. The general proposition is to beautify and make it an artery of health and beauty instead of an unsightly and malodorous gutter. The example of Hamburg in the creation of a magnificent water park in the Alster Basin is well

known, and the pictures of what has been done there, contained in the handsome document just submitted to the Legislature, very felicitously illustrate the possibilities of the Charles under an opportunity even superior to that, the conditions being almost precisely the same, and the plan of procedure recommended practically identical.

NEW BOOKS AND BOOK REVIEWS.

ANY BOOK reviewed or advertised in THE SANITARIAN costing $1.50 or less will be sent *free* to any present subscriber sending the name of a new subscriber, or to any new subscriber on receipt of the full subscription price sent on his own account; or any book so reviewed or advertised costing more than $1.50 will be sent at a discount of that amount.

ANNUAL REPORTS OF THE BOARD OF REGENTS OF THE SMITHSONIAN INSTITUTION, 1891 AND 1892. Washington: Government Print.

The introductory report of the volume for 1891, comprising the *Journal of Proceedings*, by the Secretary, is particularly noteworthy for the demonstrated necessity for an additional building for the National Museum, on account of the large increase in the accessions to the collections. In 1882, the first year of active work in the present building, the Museum contained less than 195,000 specimens. To the time of publication of this volume the number had increased to nearly 3,000,000 specimens. The increase during the preceding eight years had been more than half as large again as during the previous twenty-one years.

A careful estimate made at the end of the last fiscal year showed that there were at that time in the zoological collections, 1,850,721 specimens; in the botanical collections, 48,637; in the geological collections, 106,766; in the paleontological, 172,540; in the anthropological collections, 651,868; and in the various collections illustrating the arts and industries, 43,540 specimens. The anthropological collections illustrate the history of mankind at all periods and in every land, and also serve to explain the development of all human arts and industries.

Notably among the accessions of recent years are the bequests of Dr. Isaac Lea, of Philadelphia, which contains 20,000 specimens of shells, besides minerals and other objects; the Jeffries collection of fossil and recent shells of Europe, including 40,000 specimens; the Stearns collection of mollusks, numbering 100,000 specimens; the Riley collection of insects, containing 50,000 specimens; the Catling collection of Indian paintings, and the collection of the American Institute of Mining Engineers. Extensive collections have also been obtained from the Fisheries Exhibitions of Berlin and London, the New Orleans Cotton Centennial Exhibition, the Ohio Valley and Central States Exposition, and many collections annually from the United States Fish Commission, the Geological Survey, the Bureau of Ethnology, and other Government departments and bureaus. Insomuch that in the present Museum Building there is no exhibition space available for the collection of reptiles, mollusks, insects, marine invertebrates and invertebrate fossils; and the space now afforded for the exhibition of the vast collections of fishes, birds' eggs, plants—fossil and recent—and the geological collections, aggregating not less than 350,000 specimens, is entirely inadequate. Every space is now filled to its utmost capacity, and no more collections of any considerable extent can be received until additional room is provided for their reception.

The General Appendix comprises twenty-seven reports and papers on scientific subjects by experts, and an Autobiographical Sketch of J. von Liebig. Stellar Numbers and Distances, by A. M. Clerke; Geysers, by Walter Harvey Weed; The Gulf Stream, by Alexander Agassiz; The Absolute Measure of Hardness, by F. Auerbach; The Flow of Solids, by William Hallock; and the Corbin Game Park, by John R. Spears, are illustrated. The volume for 1892 reports continued large additions to the collections, overflowing in every part of the Smithsonian building, and well-nigh filling every storage space available. The bill providing for the erection of an additional building, as urged in previous report, passed by the Senate, April 15th, 1892, having failed to secure favorable action of the House, the great need is reiterated, and it is so patent as to justify the belief that it will be soon supplied. The first of the donations to the Institution, reported in this volume,

is $200,000 by Mr. Thomas G. Hodgkins, of Setauket, L. I., to be called the Hodgkins Fund, "its interest to be applied to the increase and diffusion of more exact knowledge in regard to the nature and properties of atmospheric air, in connection with the welfare of man in his daily life and in his relation to his Creator, the same to be effected by the offering of prizes, for which competition shall be open to the world, for essays in which important truths regarding the phenomena on which life, health, and human happiness depend shall be embodied, or by such other means as in years to come may appear to the regents of the Smithsonian Institution calculated to produce the most beneficent results." . . . In virtue of this donation, a special advisory committee has been appointed by the Secretary, to which matters pertaining to it may be referred.

The General Appendix to this volume comprises thirty-four reports and papers, original and selected, on scientific subjects, several of them elaborately illustrated.

THE INFLUENCE OF DRESS IN PRODUCING THE PHYSICAL DECADENCE OF AMERICAN WOMEN. Illustrated; and EXPERIMENTAL INQUIRIES RESPECTING THE PHYSIOLOGICAL EFFECTS OF ALCOHOL. By J. H. KELLOGG, M.D., Superintendent of the Sanitarium at Battle Creek, Mich.; Life Member of the British Gynecological Society; Member Société d'Hygiene of France; Member of American Medical Association, etc., etc. Modern Medicine Publishing Company, Battle Creek, Mich.

These are two particularly interesting and instructive pamphlets, comprising experimental knowledge of much practical utility. No mother who would protect her own health or the health of her daughters, nor teacher who has the care of girls, should be devoid of such knowledge as Dr. Kellogg inculcates on the influence of dress; and no dressmaker can afford to do without it.

His experimental inquiries respecting the physiological effects of alcohol are of still broader scope. They relate to five lines of inquiry, as follows:

1. The influence of alcohol upon nerve sensibility, relating specially to the tactile sense and the temperature sense.

2. The influence of alcohol upon the rate of mental action.

3. The influence of alcohol in small doses upon muscular co-ordination.

4. The influence of alcohol upon muscular strength.

5. The effects of alcohol upon digestion.

The author's experiments consisted in testing the strength of the individual groups of muscles in 600 men by means of a *universal mercurial dynamometer* and a chart which exhibits tracings of the tests.

The experiments were repeated upon different persons and with alcohol in different forms, as gin, brandy, wine, etc., the quantities being made such that the same amount of alcohol, about one ounce, should be taken in each case. The results were found to be practically uniform.

Dr. Kellogg's conclusions are that the administration of one ounce of alcohol internally produces the following effects :

1. Diminution of nerve activity.

2. Diminution of cerebral activity.

3. Impairment of the co-ordinating power of the brain.

4. Lessening of muscular strength.

5. Decrease of digestive activity to a notable extent.

An apparent exception is made in relation to the effect on muscular strength. The test fifteen minutes after the dose showed a small increase, but a repetition of the test two hours later showed a diminution of more than 900 pounds, and ten hours later the patient's muscular strength was still 800 pounds below the normal standard.

Other pamphlets on important subjects by Dr. Kellogg, received, are as follows :

GRAPHIC METHODS OF RECORDING DISEASED CONDITIONS OF THE LUNGS, AND A NEW FORM OF PNEUMOGRAPH.

A NEW METHOD OF OPERATING FOR HEMORRHOIDS.

IMPORTANT NEW DISCOVERIES RELATING TO DIGESTION.

ANTISEPTIC DRAINAGE IN ABDOMINAL SURGERY.

THE NON-SURGICAL TREATMENT OF OVARIAN DISEASES.

ABDOMINAL SECTION IN DROPSY.

INTESTINAL STASIS.

THE RELATION OF RECENT BACTERIOLOGICAL STUDIES TO THE ETIOLOGY OF TYPHOID-FEVER.

A NEW DYNAMOMETER FOR USE IN ANTHROPOMETRY.

SHORTENING THE ROUND LIGAMENTS *vs.* VENTRAL FIXATION FOR RETROVERSION.

Modern Medicine Publishing Company, Battle Creek, Mich.

ABNORMAL MAN, BEING ESSAYS ON EDUCATION AND CRIME AND RELATED SUBJECTS. By ARTHUR MACDONALD, Specialist in the Bureau of Education. Circular of Information No. 4, 1893. Washington : Government Print.

This is a comprehensive circular of 434 pages, comprising a thorough study, analysis, and bibliography of the subject from all available sources. It is divided into eight chapters : Introductory—education and crime, classes of society, teaching of practical morality, etc. Criminology—practical criminology, prison discipline, fundamental principles of criminology, instruction in criminology, etc. Criminal sociology—criminal aristocracy, or the Maffia ; criminal suggestion, the National Prison Association of the United States, the International Congress. Alcoholism ; views of Dr. A. Baer on drunkenness, etc. Insanity and genius. Sociological, ethical, and charitological literature—socialism and crime ; causes of present social need ; statistics of divorce ; origin of moral knowledge ; scientific conception of moral liberty ; free will ; ethical duty of man ; Christian ethics ; the ethical problem ; origin of marriage and the family ; social and moral virtue of Christianity ; laws of imitation in society ; historical and ethical tendency of political economy ; charity, pauperism, mendicancy, vagrancy, poor law. Twenty-first Annual Congress of the National Prison Association of the United States. The last chapter and larger portion of the volume consists of a classified bibliography. Each one of the preceding chapters is a terse comprehension of the literature pertaining to it, illustrated by examples. *E.g.* (1) " It is common suspicion of a number of writers that education has little influence in decreasing crime. . . . M. Tarde speaks of the action of education upon insanity and suicide, which increase *pari passu*, but he refers only to primary education. He remarks that the restrictive action of education over crime is not seen, for where there is the most illiteracy there is not always the most crime ; in Spain the proportion of illiteracy to the population of the whole country is two thirds, but

only half of the crime comes from this number. In 1883, 64 of condemned assassins knew how to read and write; 67 did not; there is one condemned theft out of every 6453 with common education and 8283 with no education. In the country where there is less education than in the city, there are eight prisoners a year for 100,000 inhabitants; but sixteen prisoners for 100,000 inhabitants in the cities. Education modifies crime. Thus within forty or fifty years the stealing of grain has diminished, while that of jewels has increased; also the proportion of crime against chastity has been very large, a probable effect of the emancipation and refinement of mind. Therefore, according to M. Tarde, 'the quantity of crime *en bloc* is not at all attacked by the diffusion of primary education. The remedy should be to proclaim the necessity of sacrifice, the insufficiency of the motive of personal interest, and the opportunity to elevate by æsthetical education of the highest sort and to spread professional education as far as possible.' From Tarde's point of view, primary education is necessary, as it is a condition of the higher and professional, even if we should admit that *per se* it is without effect.

"According to Proal, instruction is not sufficient to repress crime; morality is not an attribute of thought, but of will; spiritual beliefs and respect of God are necessary. Instruction does not do away with egotism, literary and philosophical studies have much more influence than those that are scientific."

The chapter on criminal sociology—criminal aristocracy, or the Maffia—is pertinent to the supposed extension of the Maffia organization to this country. It is an association of malefactors, whose home is in Sicily. As a rule it has no secret sects, statutes, regular meetings, or organization. Its power, however, is very great. It is divided into two clans, the Maffia of the city and the Maffia of the country. They operate together, sustain one another, and divide the booty. They are professional criminals; they steal, assassinate, seek to get possession of the large proceeds, and to get rich by this method. The rustic members are bands of from ten to twenty brigands, who infest the country, causing terror everywhere. They have their own code of justice, which is not social justice; their verdicts are unchangeable and prompt.

A witness condemned by the Maffia is killed within twenty-four hours. They work by terror. A judge will avoid condemning a criminal through fear of being stabbed ; a witness against the criminal shares the same danger. The Prefect of Palermo defines the Maffia as a latent and pernicious power in a country where corruption and reaction against authority is a heritage of the past. There are classes of *Maffioso :* The *Maffioso* of action—that is, brigand, the thief, or the assassin ; the secret *Maffioso,* who gathers and distributes the news and is a silent aid for the perpetration of crimes ; the *Maffioso manuten golo,* through fear or interest, is the purveyor and receiver of stolen goods for the *Maffioso* of action. *Bassa Maffia* is a lower grade of society. Here any scamp who thinks he has courage can become a Maffioso ; he threatens to kill some one, and is honored by all. The *Alta Maffia* seeks to make a show of good manners, and at the same time to be in accord with the brave of the Maffiosi of low extraction. The *Bravi,* or supreme chiefs, are sometimes elegantly clothed and wear yellow gloves. Then there are the stabbers and the thieves. They seek financial aid in enterprises of vengeance, in clandestine lotteries, in illicit profit from public works, and sometimes in blackmailing.

They all follow faithfully their unwritten code. Here are some of the principles : To keep absolute silence concerning the crimes which they witness, and to be ready to give false testimony in order to cover the traces ; to give protection to the rich for money considerations ; to defy public force at all times and everywhere, and always to be armed ; to fight a duel for the most frivolous motives, and not to hesitate to stab treacherously ; to avenge at any price injuries received, even if one is intimately related to the offender. Whoever is found wanting in any of these respects is declared *infamous,* which means that he should be killed without delay, even if in prison ; if weapons are wanting, to suffocate him in his pail. He receives also an order to give himself up to death. Knowing the condemnation to be irrevocable, he strictly obeys. Before killing a comrade one notifies him by drawing a cross on his door or by shooting a pistol at his house. Lombroso has seen many escape death by seeking mercy in being shut up alone in a prison cell.

Like ordinary rascals they have their slang. They say "sleep" instead of death, "cats" for war, "ruby" for eye, "product of extortion" for linen, "tic-tac" for revolver.

The most complete organization of criminal aristocracy is the Cammorra at Naples. The Maffia is a variety of the Cammorra, of which organization a description is also given in detail, after which follows an essay on the repression of crime by Garofalo—representing the Italian school of criminology.

Under Alcoholism Dr. A. Baer, of the Imperial Board of Health and chief prison physician of Berlin, is quoted at considerable length. The greater mortality of drinkers, as compared with non-drinkers, is shown by the figures of the United Kingdom Temperance and General Provident Association, an insurance company, founded in 1847—1866 to 1887:

Total Abstainers: Deaths expected, 3937; actual deaths, 2798.

General Division: Deaths expected, 6144; actual deaths, 5984.

In the "total abstainers' division" 71 per cent of the expected deaths occurred; in the "general division" 97 per cent. Other companies give similar figures. . . . The relation between drunkenness and crime is not always a parallel one. Crime is not alone conditioned by the quantity or intensity of intemperance, for it owes its rise to many social conditions also; but all these unfavorable conditions are aided by drunkenness, and in this sense the abuse of alcohol increases crime very greatly.

Altogether the report is of much value, comprehending the gist of an immense amount of literature on the subject and deductions of practical utility.

NOTES AND NOTICES.

TOLD IN A NUTSHELL—NEW YORK INSANE ASYLUM ABUSES.—In the process of inquiry into the abuses of the insane asylums on Blackwell's and Ward's islands, under the "care" of the Commissioners of Public Charities and Correc-

tion of the city of New York, June 15th, Dr. Louise G. Rabinovitch, whose evidence had filled several columns of the newspaper reports of previous days, was asked by A. H. Mastin, Esq., counsel for the Commissioners :

Q. " Now tell us, doctor, in a nutshell, exactly everything you saw at Blackwell's Island or Ward's Island about which you wish to complain, and on what grounds your complaints are based ?"

The witness answered as follows :

" The food is not fit to eat and the medical care, or rather the lack of medical care, is simply unpardonable. The buildings are also dangerously out of repair, the overcrowding and the lack of separate rooms for eating and sleeping is a case of neglect of the most grave character. I also want to say that the medical treatment of the patients is extremely defective. Erysipelas and tuberculosis are allowed in the same wards with patients not sufferers with those diseases. Such a state of affairs would not be tolerated even in China. Another very serious thing is the absence of sitting room, and the fact that the patients are not allowed to breathe fresh air, owing to the windows not being raised from the bottom. The patients are also treated with unkindness and are made to walk on a stony road instead of being permitted the privilege of using the green lawn. There have been cases not infrequently of natural deaths through neglect of medical treatment and also the continued use of neglected buildings. Women are also made to do work which is not woman's work, and there is also a great insufficiency of clothing. On Blackwell's Island a thousand women are in ten pavilions, which are in such a dilapidated condition that the rain pours through the roof upon their beds. There was more room on Blackwell's Island than on Ward's Island, but the food was even worse if possible."

Other questions only served to elaborate the disgraceful conditions.

WHY CONSUMPTIVES SHOULD NOT MARRY.—" Of consumptives who become pregnant it is probable that 25 per cent *will die* within a year from their delivery. Across the water 64 per cent *have* died within that time. Of the children

13 per cent will perish during the first year, but 50 per cent will attain middle life *here*, while *there* only 37½ per cent of such children maintained good health, 62 per cent became scrofulous, and 23 per cent died of tuberculosis alone before attaining their seventh year."—*George B. Peck, A.M., M.D., "American Women Childing"—R. I. Medical Science Monthly, March*, 1894.

THE WORK OF A DAIRY SCHOOL.—The instruction is given, first, by lectures; second, by work at the separators, the churns, and the cheese vats, as well as in the laboratory. Lectures are given in the following branches: The breeds and breeding of dairy cows, the feeding of dairy cows, diseases of dairy cows, the chemistry of milk and its products, bacteriology of the dairy products, physical problems connected with the dairy, and the care and management of the boiler and engine. These subjects are presented to the class by different professors of the university.

The work in the creamery room includes the handling and care of the cream previous to churning, the churning, and the working and packing of the butter. In the cheese room, where there are eight milk vats, each of a capacity of three hundred pounds, thirty-two students may work at the same time; the various steps in cheese-making, from the proper handling of the milk to the curing of the cheese, are here learned.—*From "Dairy Schools and Dairy Products," by Professor F. W. Woll, in The Popular Science Monthly for June.*

DANGEROUS FLIES.—In some recent experiments flies have been found to be most successful as infection-carriers of the cholera bacilli. A fly which had been infected by being put on a mass of cholera bacilli was placed on a piece of beef, which after an interval was examined. It was found to contain an enormous number of living bacteria. A finger infected with cholera bacilli was held in the air for seven or eight minutes until it was quite dry. An hour afterward the finger was rubbed on some dry roast meat. Here also a large number of bacilli were developed. After an hour and fifty minutes had elapsed no more living bacilli were developed. From these experiments the often-taught lesson was deduced that

in time of cholera epidemic the most scrupulous cleanliness is the best safeguard.—*From London Letter, American Practitioner.*

THE TWO GREAT RACES IN THE WORLD'S FUTURE will be the Anglo-Saxon and the Chinese. They will not displace each other, but they will effectually dominate all others. This will seem to many a rash prediction, to some a crazy one ; but let each look at the facts.

I will not consume my space by citing facts on the Anglo-Saxon half of the prediction. They are sufficiently manifest at least to us who are ourselves Anglo-Saxons. But see what corresponding facts can be found respecting the Chinese.

We are a colonizing people—so are they. Certain superstitions relating to the burial of their dead hinder the full development of their facility in this direction, but the facility exists manifestly. Overcoming all barriers, they begin to be found in all parts of the world. And where they go they stay. They send home the bodies of the dead, but the vacant places are filled by the living. In spite of restriction laws, increasingly severe, Chinatown in San Francisco, instead of reducing, extends its limits year by year.

We colonize *as* Anglo-Saxons ; going to Australia not to become Australians ; to South Africa, not to become Africans, but everywhere to be Anglo-Saxons still. So do the Chinese. This is part of our complaint against them, that even in the very heart of Anglo-Saxondom they are still and inflexibly Chinese.—*Dr. W. C. Pond, The Spirit of Missions.*

THE POST-GRADUATE AND MEDICAL SCHOOL, New York, opened its NEW HOSPITAL May 15th. There was a large gathering of church people and others who had contributed to this good and needed work. The provision for sick children is particularly beautiful and complete, and has aroused a wide degree of interest. Some wards have been furnished by individual donors. Among these is the Good Cheer Ward, by Mrs. Anson Phelps Stokes, of the Church of the Heavenly Rest ; the Advent Angel Ward, by Mrs. Ella C. Lamb, as a memorial to her infant son ; the "Stroller's" Ward, by the Strollers' Club of Columbia College, and the Zaidee Ward, by

Miss Cortlandt Palmer, in memory of Miss Zaidee Fulton. A diet kitchen has been provided as a memorial to the late Mr. Richard Jessup Morgan. In the evening at a public gathering of friends, the Rev. Dr. William R. Huntington made an address on the medical care of babies, and was followed by other speakers.

OUT-OF-DOOR LIFE is a particularly seasonable article contributed to the *Century* for June by John Burroughs, being a series of "Field Notes" by this ever-welcome and cheerful observer of nature. Among the poets of the June *Century* are Frank Dempster Sherman, Sara King Wiley, Ellen Knight Bradford, W. P. Foster, Edith M. Thomas, and Edmund Clarence Stedman, whose poem "Huntington House" is beautifully illustrated by pictures by Louis Loeb in keeping with the poet's reminiscence of ladies of a bygone generation.

POOR LITTLE CRIPPLES OF LONDON.—It is probably only those who have studied the "Submerged Tenth" of childhood who know that there is one chronic ailment which among these children seems like a sort of epidemic.

And it is not scarlet-fever, not typhoid, not diphtheria, though it might so easily be any of them, or all three combined in some hideous form. It is spinal and hip disease. Whatever the cause, the fact of the prevalence of hip and spinal disease impresses itself at once on those who interest themselves in the children of the London poor.—*From "The Story of a Beautiful Thing," by Mrs. F. H. Burnett, in the June Scribner.*

THE REVIEW OF REVIEWS for June gives the details of the projected "Historical Pilgrimage" which is to be begun at Philadelphia, July 28th, 1894. The itinerary will include New York, Hartford, Boston, Salem, the Hudson River, and Trenton, and lectures will be given at the different points by specialists in American history. Attention is also called in this number of the *Review* to the work being done by Virginia women for the rescue of many of the historic shrines of the Old Dominion.

PHILADELPHIA is in many respects the most interesting of the great cities of the country. It has preserved its individuality to a remarkable extent in the region known as Old Philadelphia, and in the newer portions it exhibits commercial and social phases of life which may be duplicated in New York and Chicago. The various aspects of Philadelphia are treated from the standpoint of a younger member of the old community in an illustrated article in the June *Harper's* by Charles Belmont Davis.

POISON IVY and the characteristic inflammation produced by it are known in different localities by several aliases. It appears not only as a vine, but as a bush of considerable size, and grows abundantly almost everywhere.

The virulent principle of this plant, says an eminent specialist on diseases of the skin, is a volatile acid, which exists in all its parts, especially in the leaves. All persons are not affected by it; some handle it with impunity. Actual contact with the plant is not always necessary for the production of the poisonous effects on account of the volatility of its active principle, and there is good reason to believe that persons sensitive to the poison not infrequently suffer from passing by places where the vine grows abundantly.

The plant is supposed to be most actively virulent during the flowering season, in early summer, but cases occur with great frequency during autumn. Even in the winter, twigs and stems are alive to mischief to those who handle them.

One writer tells of a patient who cannot drive through the woods where the poison sumach grows without subsequently suffering with the characteristic inflammation, and that in merely passing to the leeward of a field where the farmers were burning brush has repeatedly been sufficient to evoke the eruption. The poisonous influence of the plant is transmitted with the greatest facility on clothing and other articles in use.— *Dr. R. L. Patterson, in Western Medical Reporter.*

CHOLERA A NITRITE POISONING.—Emmerich and Tsuboi, according to publications in the *Münchener med. Wochenschrift*, come to the conclusion that cholera is a nitrite poisoning, basing their conclusions upon the facts that the cholera

bacillus is able to a greater extent than any other bacillus to reduce nitrates to nitrites, and the internal administration of nitrites in quantity of 0.5–0.6 gm. is capable of producing very similar physiological effects in man. While other varieties of bacteria are capable of forming nitrites, none of these thrive in the intestines.—*Apotheker Ztg.*, 1893, 322; *Amer. Jour. Pharm.*

"ORIGINAL REFLECTIONS" is a prominent head-line in the table of contents in the May number of one of our most flowery medical exchanges, under which appears:

"Observations on the Diagnosis of Diphtheria, and some Sanitary Aspects—Suiter Herkimer, New York. Page 201." On turning to the page indicated we find the same title, "By A. Walter Smith, A.M., M.D.," etc., followed by the "Original Reflection"—a garbled abstract of Observations on the Diagnosis of Diphtheria and Remarks Relative to State Sanitation, by A. Walter Suiter, A.M., M.D., exclusively contributed to and published in THE SANITARIAN for April.

In the June number of the same mirror of "Original Reflections" for June there is an "Editorial" on "Substituting, Counterfeiting, Stealing." Comment is unnecessary.

JUST ISSUED—Vol. II. Pepper's "American Text-Book of Practice," completing this magnificent work of medical art. Of the 2000 pages of text, over 500 pages are from the pen of Dr. William Pepper. Prices, two volumes, cloth, $10; sheep, $12; half Russia, $14. Full particulars will be furnished promptly on application to the publisher, W. B. Saunders, 925 Walnut Street, Philadelphia.

PUBLICATIONS RECEIVED.

A New Pathology and Treatment of Catarrh. Seth Scott Bishop, M.D., Chicago.

Pathological Significance of Immunity. A. L. Chapman, A.M., M.D., Kansas City, Mo.

Recumbency in the Treatment of Pott's Disease. John C. Schapps, M.D., Brooklyn.

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PROCEEDINGS OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION—ELEVENTH ANNUAL MEETING.*

SECOND DAY, MAY 30TH, 1894.

DR. ANDREW H. SMITH, President, in the chair.

The first paper was by Dr. H. B. Moore, of Colorado Springs, entitled "A Plea for the Earlier Recognition of Pulmonary Tuberculosis, and the Adoption of Proper Climatic Treatment." Owing to the absence of Dr. Moore, his paper was read by title.

The second paper was by Dr. Vincent Y. Bowditch, of Boston. Its title was "Three Years' Experience in the Sanitarium Treatment of Pulmonary Disease, near Boston." It was home treatment. He drew a comparison between the well-known Frankenstein Sanitarium, near Frankfort-on-the-Main, Germany, at an elevation of 1500 feet above sea level—a famous resort for the wealthy classes in Europe—and the Sharon Sanitarium, on a hill 400 feet above sea-level—the latter for the working classes, largely shop girls. He also made reference to the sanitarium established in New York City by Dr. A. D. Loomis and Dr. Charles Quimby.

It goes almost without saying that New England is deemed unfavorable for consumptives. Its climate has that reputation. What can we do for the poorer classes? Cod-liver oil, food, and air? Left to the old-time methods, they slowly fail. The ordinary American country boarding-house is not suited for consumptives. Such houses are badly ventilated, and the food is badly cooked.

So far the building at Sharon can accommodate nine female patients. It is built with reference to an abundance of sun-

* Continued from page 49.

light and pure air. Every room is fully ventilated. It has broad piazzas, where the patients are kept out in the coldest weather. No carpets or rugs to entangle dust; no sweeping allowed within. The cleaning is done by wiping the woodwork with damp cloths. Sputa and the cups used as receptacles for it are destroyed by fire. The sanitarium opened February 9th, 1891. It has received fifty-one patients. Of forty-eight, eight were cases of bronchitis; the remaining forty had various forms of phthisis. Ten had been discharged with the disease arrested. In no case had he used the term cured. The majority of the ten had been away from eighteen to twenty-four months. All reports from them were favorable. In several cases both lungs were involved. Some of the latter left improved. Of eight arrested cases, seven gave excellent results. In only three of these were bacilli found. He often found that bacilli were not present in cases presenting all the evidences of phthisis—cough, hemorrhage, sputa, malarial and night sweats, all of the usual symptoms, but no bacilli. One patient had been in two years, and had gained twenty-eight pounds. Another looked fat and well. Another that had had cough and hemorrhage had gained fourteen and one half pounds in four months; now in California, with an excellent prospect of recovery. In some twenty-five per cent the disease seems to be arrested.

Bacilli had been found in cases classed as improved. In six cases the results had been very satisfactory.

He advocates the sanitarium treatment. Previous to the opening of Sharon, he thought that a community of such patients would be unfavorable. Experience had shown his error. What was the effect of the proximity of patients one to another? At first there was depression; it soon wore off. They are kept under strict control, hence the benefits of such a system or the sanitarium treatment under skilled management. Under such a form of treatment all can be watched carefully. It was the rule at Sharon to receive cases showing only the early symptoms. If they failed to improve in a few weeks he favored their return to their homes.

Referring to the methods of treatment, a daily visit was made by the physician. The chief aim was fresh air and good food. They are absolutely necessary for recovery. Ex-

ercise within fatigue. Rest in the open air aids, even in the coldest weather, patients being warmly wrapped up. Drugs, as a rule, were avoided. He believed in the cabinet treatment and pulmonary "gymnastics." He had no faith in the germicidal action of drugs or vapors. He was not wholly convinced of the value of tuberculin.

In making a very brief report on three years' work, he endeavored to leave out the personal equation. Our sole aim should be to do our best for our patients. To deal with the truth and nothing but the truth in our reports.

Discussion followed. Dr. von Ruch, of Asheville, N. C., deemed Dr. Bowditch's experience valuable. Climate is not so important as management. It is not so much where it is done as how it is done. While a practitioner in Ohio he had had about the same results in fifty-eight observed cases. In twenty-five per cent there was arrest, and improvement in thirty-three per cent. Benefit may be had at home if patients will do as they are instructed to do. He did not concur in Dr. Bowditch's views regarding tuberculin, however. He uses it still, and to-day has greater faith in it than ever. Early cases of phthisis want to wait. They always think some one else worse than themselves. Tuberculin, applied in cases early, as recommended by Dr. Koch, gave excellent results. It has a stimulating effect on the tissues. It can be pushed to producing congestion. Some use one hundred thousand milligrammes in a month. Such rash treatment simply did harm. It was overdone. Using tuberculin in the smaller doses gives an effect in from five to ten hours after exhibition. Where fever is produced, the limit of the dose has been used. He firmly believed that the results will be quite as good as Dr. Koch led us to hope.

Dr. J. H. Musser, of Denver, Col., said that we had reached a time when, if tuberculosis is properly managed, within certain limitations it might be deemed a self-limited disease, and the tendency is to cure. Dr. Bowditch's sanitarium treatment should be encouraged. Sanitaria should be established within city limits for the poorer classes. If a sanitarium is not properly conducted, it will fail. He referred to careless methods and the infection or contagion resulting from careless work.

Dr. Charles Quimby, of New York City, gave an interesting as well as a graphic account of the New York sanitarium referred to by Dr. Bowditch, and what they hoped to accomplish. Dr. Quimby believes that hitherto too much had been said relative to phthisis and too little as to the treatment of phthisics. The primary object of the New York sanitarium was to relieve the working classes, who must work or starve. He believed in the use of the pneumatic cabinet as well as in pulmonary gymnastics. The consulting staff of the New York sanitarium is as follows: Drs. Loomis, A. H. Smith, Polk, and McBurney. The records were to be open to the consulting staff. They would be requested to see the cases and make a forecast as to their probable expectation of life. This he wanted for purposes of comparison—such forecasts to be made on entrance. He carefully outlined the usefulness of such sanitaria.

Dr. R. G. Curtin, of Philadelphia, spoke of the results at the Philadelphia Hospital in the phthisis wards. In 1888–89 such patients had tubercular sputum. In 1890 influenza appeared, when half of the old cases died. In 1891, out of twenty-eight cases, fifteen had no tubercle bacillus. A number of post-mortems were made. Ulceration of the lungs was found, but the closest examination of the tissues failed to detect bacilli. Recently a German bacteriologist had found another bacillus different from the tubercle bacillus. Dr. Curtin thought that this might explain matters. The special cases were noted since the epidemic of influenza.

Discussion on Dr. Bowditch's paper being concluded, Dr. Curtin followed with a paper on "Creosote, Guaiacol, and Benzoyl of Guaiacol in Phthisis." He gave a *résumé* of his hospital experience, stating that his primary object was to elicit a discussion on the treatment of tuberculosis by guaiacol, etc. Dr. Glasgow, in 1891, had read a paper on the action of guaiacol. Dr. Jacobi, of New York City, had taken up the matter. Twelve years ago he (Dr. Curtin) used Declat's syrup of phenic acid. It gave much the same results as guaiacol. Subcutaneous injections of phenic acid were very painful. One patient said that he preferred death. As a result of the use of phenic acid, there was an improvement in the appetite and an increase in flesh. Less dyspnœa.

Speaking of beechwood creosote, it and guaiacol chemically have much in common. Dr. J. J. Whittaker, in 1893, directed attention to it. When guaiacol is pure it is harmless, and easily borne by the stomach. It had no effect on the bacilli. Some patients take small and others large doses. Creosote may produce hæmaturia. In those who bear it best, as far as the stomach is concerned, there is an increase in weight. In acute phthisis with high temperature there is no benefit from guaiacol. The class most benefited is where there is slight fever and poor digestion. Dyspepsia may be cured by phenic acid, also greatly benefited by guaiacol. He uses the latter in a pill. It is good in chronic ulceration of the lungs. He does not believe that it has any specific effect on the lungs. Benzoyl of guaiacol was recommended by a German physician. He (Dr. Curtin) had not found it better than guaiacol. He does not deem it as reliable. He thinks guaiacol less liable to produce irritation of the kidneys. When pure you know what you are administering.

Discussion followed. Dr. A. L. Loomis, of New York City, does not believe that such agents exert any special action. In many cases they seem to do just as well without it. When introduced into the stomach, he found no evidence that it had any other effect than to improve the digestive powers in a certain class of patients. Some patients were saturated with such drugs.

Dr. Robert H. Babcock, of Chicago, had used guaiacol and creosote. Some patients stood them well, others did not. He cited a case where one hundred and fifty drops of creosote had been given in twenty-four hours with benefit. There had been hæmoptysis. Some patients cannot take creosote or guaiacol.

Dr. von Ruch, of Asheville, N. C., used creosote four years ago hypodermically. In four patients who held out and suffered he continued the remedy two months. They received four grammes a day. He watched the urine. Tubercle bacilli were present in the four cases. It had no effect on them. He was satisfied that they got good results from using creosote. It was very beneficial in bronchial cases, also useful in gastro-intestinal cases.

Dr. W. M. Gibson, of Utica, N. Y., had found that creo-

sote had an effect on the blood. Moderate doses of creosote are followed by an increase of leucocytes after a meal, producing a better phagocytosis; a count of the corpuscles proves it.

Dr. Ellsner, of Syracuse, N. Y., said that in hospital and private practice, in chronic cases he had got very good results with creosote. He said that it was most difficult to make an early diagnosis in tuberculosis. No tubercle sputa was present unless there was cheesy infiltration in the lungs. There must be breaking down to get bacilli.

Dr. J. B. Walker, of Philadelphia, deemed the odor of creosote in the breath of such patients disagreeable. They reeked of creosote. He said whether the skin will take it up or not, the skin will give it out. If it is not an anti-bacillary agent, why give the large doses? He believes it to be anti-catarrhal, and that it has a modifying effect on the tissues. It does not kill the tubercle bacillus.

Dr. A. L. Loomis said that he had found tubercle bacillus without destruction of tissue. A patient may show tubercle bacilli without any destructive changes in the lungs or air passages. He had a case where the lungs were unaffected. While he was examining a patient's chest, the young man had quite a profuse hemorrhage. Some of the blood and mucus were examined—got a large number of bacilli. Again he made a careful examination of the chest and got no evidences of pulmonary disease. The patient had hemorrhage for three or four days. The blood gave bacilli with no expectoration—that was two and a half years ago. Case now seems well. Patient had had no rational symptoms. Bacilli may lodge in the bronchi. This may occur without their entering the lung tissue. Tubercle bacilli may get into the lungs through the lymphatics and the blood-vessels. In the bronchi they cause local inflammation. It may be a long time before there are real destructive changes; when they occur we get the ordinary symptoms.

Dr. Ellsner respectfully begged to differ with Dr. A. L. Loomis. He thought that in the case cited by Dr. Loomis there might have been previous tubercular infiltration, and necrosis in the ruptured vessel. The majority of cases do not give us the presence of tubercle bacilli. Even in miliary

cases you have great difficulty in making a diagnosis between phthisis and typhoid.

Dr. Loomis held to his view that if a patient has symptoms of bronchitis, and no tubercle bacilli can be got, he would not be willing to call it phthisis.

Dr. Glasgow, of St. Louis, Mo., deemed creosote very valuable. He had failed to get any effects on the kidneys. He gave from two to seventy minims. A single minim seemed a poison to some. He dissolved the creosote in a little whiskey, and had that mixed with cream and milk. He got excellent results in bronchitis-phthisis or alveolar-phthisis. Creosote does not have any effect on the bacilli ; but he thinks that it has an effect on the poisons they generate ; also believes that good results from inhaling its vapor at night.

Dr. R. G. Curtin closed the discussion, and expressed his satisfaction with the many views elicited.

The fourth paper was by Dr. Frederick I. Knight, of Boston. Its title was, "Shall Anything be Done by Legal Authority to Prevent the Spread of Tuberculosis?"

Twelve years have passed since information as to the real nature of tuberculosis had been made public. Despite this, little seems to have been done by the country to prevent its spread. He gave a review of the methods recommended by the Pan-American Congress in 1893 and the Board of Health of New York in February, 1894. He read *in extenso* its resolution. Referred to action in Philadelphia. In Massachusetts he deemed the time was ripe. The action taken there had met the approval of the State Board of Health. It had issued a bulletin and leaflet. He reviewed the literature on the subject—the danger of the sputa, infected cattle and milk, etc.

Referred to the experience of the late Dr. Henry Bennett, of Mentone, who frankly told his patients what to do, and to make an intelligent fight against the disease.

Discussion followed. Dr. Bowditch, of Boston, fully concurred in Dr. Knight's statements ; said that we want the happy medium between the extremes. The poorer classes should be under observation of boards of health—the better classes have their physicians.

Dr. von Ruch, of Asheville, N. C., referred to the results at the Loomis Laboratory, New York ; also the results of

Tissini's work ; out of fifty-six autopsies, in ten or twelve the deaths were due simply to accident. In these tubercle bacilli were found in the bronchi only. He referred to our disease-resisting powers, and where the latter was lowered by typhoid or influenza, then the disease develops. This would explain the presence of the bacilli in the case described by Dr. Loomis.

Dr. John Winters Brannan, New York City, referred to the work done in New York for two or three years past anent this matter. The action of the State Board of Health of Michigan pleased him. Its manifesto used the proper term. He said that tuberculosis was not contagious in the old sense of the word ; the Michigan Board of Health was happy in using the words "is a communicable disease." The New York Board of Health was about to use the word "contagious," but acting on the wisdom shown by Michigan, used the word "communicable." Tuberculosis is a communicable disease. The Board of Health of New York had won the confidence of New York physicians by its able and timely action in the matter of diphtheria, etc.

Dr. Roland S. Curtin explained why Philadelphia physicians had to be conservative. There measures had been carried to extremes.

Dr. J. B. Walker, of Philadelphia, concurred in what Dr. Curtin had said relative to the experience of physicians in that city in dealing with some Board of Health officials endowed with an excess of zeal.

Dr. Judson Deland, of Philadelphia, endorsed previous speakers. He deemed the sputum dangerous. The College of Physicians and Surgeons of Philadelphia had no desire to obstruct. It feared an excess of zeal on the part of its Board of Health.

Dr. Wolcott, President of the Massachusetts Board of Health, addressed the meeting, stating what had been done in his State. Dr. Knight, in his paper, had fully covered the ground taken by the State Board of Health. He advocated the New York method as best *ad interim.*

Dr. Andrew H. Smith concurred in Dr. Knight's views. Said that the casual meeting with a phthisic does not involve any danger. Many deem a phthisic, like a leper, unclean.

Dr. Knight closed the debate ; he was pleased with the evidences of such unanimous endorsement.

The fifth paper was by Dr. S. E. Solly, of Colorado Springs, entitled " Further Report of Cases of Phthisis Treated at Colorado Springs." Dr. Solly being absent, his paper was read by title only.

Dr. Knight's motion was as follows :

Whereas, The American Climatological Association was founded, among other objects, to promote the study of the Nature and Treatment of Diseases of the Respiratory Organs ; and

Whereas, Tuberculosis is the most fatal cause of such diseases ; and

Whereas, Modern research has placed this disease among the infectious, and hence, to some extent at least, among the preventable diseases ;

Resolved, That this Association do strongly recommend all boards of health of this country to adopt measures tending to the restriction of the disease.

Session adjourned.

(*To be continued.*)

EARLY ATTEMPTS TO ARREST THE RAVAGES OF SMALL-POX IN AMERICA.

By Mrs. H. M. Plunkett.

Now that the attention of the whole country is turned to the extensive outbreak of small-pox in Chicago, and the persistent though small one in New York, that refuses to become " stamped out" in spite of daily promises that it will be, a little picture of the condition of things before the introduction of the beneficent ameliorations of the disease, first, by *inoculation* for small-pox ; second, by vaccination of the *arm-to-arm* kind, with its occasional mischiefs and risks, and thirdly, the safe and almost infallible protection of the pure bovine virus skilfully inserted, may not come amiss.

Cotton Mather was, as readers of colonial history know, a very prolific writer both on religious and medical themes.

That he had a lofty ideal of the powers of the two vocations —theology and medicine—may be inferred from the passage in the "Magnalia," where, in writing of Thomas Thacher, first minister of the Old South Church in Boston, and author of the first medical treatises printed in the country, Mather says, "Thacher was a notable example of the *angelical conjunction* of clergyman and medical practitioner." Mather wrote a book called "The Angel of Bethesda;" it was never printed, but part of the manuscript is still in the possession of the American Antiquarian Society, and the only date that helps to fix its period is observations of a case November 14th, 1724. His attention was certainly alert on medical matters, and he did not hesitate to incur obloquy and danger in defending medical ideas that he believed in.

In 1721 a fearful epidemic of small-pox had visited Boston, which then had a little less than 16,000 inhabitants. Nearly 1000 died. A little previous to this the news of the value of inoculation for small-pox, as brought to England from Turkey by Lady Mary Wortley Montagu, had found its way across the water; and Rev. Mr. Mather, being an omnivorous reader, had "taken it in." Very possibly the operation, which he calls a *wonderful practice*, gained additional favor in his eyes from an experience that will be best related in his own words. It will be remembered that Lady Mary found the practice to belong to the immemorial usages of the Orient. Popular tradition always fastens on China as the *fons et origo* of everything—it would not surprise us to learn of their claiming the phonograph yet—but in this case knowledge seems to have dwelt with some of the sons of Africa. Of course Rev. Mr. Mather had slaves; but from what province one could have come to be called a "Garamantee servant" modern maps do not reveal. Mather says: "I was first informed of this wonderful practice by a Garamantee servant of my own, long before I knew that any *Europeans* or *Asiaticks* had the least acquaintance with it, and some years before I was enriched with the communications of the learned *Foreigners*, whose accounts I found agreeing with what I received of my servant, when he showed me the scar of the wound made for the operation, and said that no person ever died of the *small-pox* in their country that had the courage to use it.

" I have since met with a number of these *Africkans*, who all agree in one story : that in their country *grandy-many* dy of *small-pox*. But now they learn this way : People take juice of *small-pox* and *cutty-skin* and put in a *Drop ;* then by 'nd by a little sicky, sicky ; then very few little things like small-pox ; and nobody dy of it ; and nobody have small-pox any more. Thus in *Africa*, where the poor creatures dy of small-pox like Rotten Sheep, a' merciful God has taught them an *Infallible preservative*. 'Tis a common practice, and attended with a constant success."

It is no wonder that, when prayers were being asked in the churches at the rate of a hundred a day for persons sick of the loathsome disease, Mr. Mather got the doctors of Boston—then six in number—together, and recommended this practice. But behold—how the " prophets were stoned !" Of these six doctors, Zabdiel Boylston was the only one whose convictions were strong enough to result in action. On June 27th, 1721, he inoculated his *only son* for small-pox, and afterward, in the course of the epidemic, 290 were inoculated, of whom 6 died—one forty-eighth ; while one-seventh of those who had the disease in the natural way died, and of the survivors some were blind, and some frightfully disfigured. Dr. Boylston was mobbed. Rev. Dr. Mather had a hand grenade thrown in at him through his window. An old lady of eighty —Mrs. Crossland—has published some " reminiscences" this year, and, among other points of superiority for this century, calls attention to the fact that when she was a child nearly everybody had pock-pitted faces. This was in England. When the amelioration had a fair opportunity to demonstrate its value, America was far in advance of England in adopting it. It was soon found that a person passing through the inoculated disease gave it to others exactly as if it had been taken in the natural way ; so very soon " inoculation houses" were established—we should say " sanatoria." It was sixty years after the knowledge of the practice was brought to England before it gained the royal sanction ; and your conservative Englishman was not going to risk his life till royalty had set the example. A certain influential Frenchman told of its destructive work ; and Edmund Massey, lecturer at St. Albans, preached against " sinfully endeavoring to alter the

course of nature by presumptuous interposition, which he would leave to the atheist and the scoffer, the heathen and unbeliever." The sermon was reprinted in Boston, but, to their credit be it told, many New England preachers boldly advocated the practice in their pulpits.—For much of the preceding credit must be given to a medical essay of Dr. O. W. Holmes, on the Medical Profession in Massachusetts. Now that the pestilent anti-vaccinists are trying to place themselves athwart the efforts making to stamp out small-pox in some parts of the country, it may not be amiss to quote this veteran practitioner's and lecturer's estimate of vaccination. He says: "The third century of our medical history begins with the introduction of the second great medical discovery of modern times [that of Harvey being the first]—of all time up to that date, I may say. For the month of July, 1800, Dr. Benjamin Waterhouse, of Cambridge, Mass., submitted four of his own children to this new process."

Of course the history of the final triumph of the process is familiar to all; but comparatively few know the difficulties that beset its discoverer in its early days. Some of the London doctors undertook to vaccinate without having made themselves acquainted with Jenner's careful rules for its practice. They had no conception of the modern phrase "surgically clean," and when one of them inserted vaccine virus with a lancet that had been used a short time before to inoculate for small-pox, and had not been washed *ad interim*, and the subject had small-pox instead of kine-pox, we see one of the dangers that was likely to disrate the operation. Jenner was finally forced to give up his pleasant Gloucestershire home and go to London to protect from mistaken friends and avowed enemies this child of his brain, this fruit of twenty-five years of study and observation. The germ theory of disease leads us to believe that there may have been cases in which undesirable diseases may have been occasionally introduced along with vaccine virus; but in this day, when pure, safe virus that has never passed through anything but the tissues of a healthy calf can be had, prepared with the utmost care by men who know how to carry out asepsis in its nicest minutiæ, the frantic hullaballoo made by a little knot of active ignoramuses is indeed pitiful.

Jenner did not escape jealousy, envy, and misrepresentation. He had sacrificed a lucrative country practice to come to London, and made inroads on his private fortune in supplying nearly all Europe and parts of Asia and Africa with vaccine matter, and Parliament had made him a grant which seems niggardly enough beside the benefit conferred, and some of his ardent friends moved to secure another. The story of the spread of his discovery to all parts of the civilized world reads like a fairy tale; but in his own country an anti-vaccination party sprang up which counted among its members some wealthy men who could print unlimited broadsides, books and pictures. This party charged that nearly every loathsome disease in the category had been imparted along with vaccine virus; that cow-pox left the system weakened and ready for the onset of almost every disease; that small-pox fortified and purified it!! A rain of inaccurate and misleading pamphlets set in; the title of one was Poisoning by Act of Parliament. Some of the caricatures have survived till now. One flaming colored one represents "A Mighty and Horrible Monster." It has the horns of a bull, a tiger's claws, the hind hoofs of a horse, and the jaws of an alligator, yards apart, with doctors galore with their names down their backs emptying into its yawning chasm baskets and huge shovelfuls of infants, while the background is made up of funeral monuments and hearses. This creature is named "VACCINATION," and the body is written over with "plague," "leprosy," "Pandora's box," etc. It was seriously argued in Parliament that the people would become cow-faced, and that the desire to be vaccinated had become a craze. An astute adherent of Jenner replied that "if this bestial transformation did occur, it was a wonder that it had not already been brought about by eating roast beef and beefsteaks, and drinking milk." This argument carried weight, for the grant of money was made; but Jenner's professional pride was deeply wounded because members of Parliament believed in the positive value of his work, but did not put enough faith in his scientific suggestions to put a stop by law to the dangerous practice of inoculation for small-pox. A statute was enacted to accomplish this in 1840, long after Jenner's death.

Gasquet justly says: "We who live in that security from

the horrible and universal plague of small-pox, for which we are indebted to Jenner's immortal discovery, cannot realize the blessing that he conferred on mankind. The death-rate from this disease in England in the last half of the last century was such that, if applied to the present population, it would give 70,000 deaths per annum. In London the deaths before 1804 had averaged 2018 in a population of 1,000,000. In 1890, in a population of 4,000,000, there was just one death from small-pox. A modern miracle! for communities left in a state of unassisted nature are just as pervious to its attacks as ever—witness the complete destruction of the Mandan Indians, and the following instance in South America. In 1879 Mr. Ashley, M.P. for Brighton, made a yachting tour to Brazil. He stopped at Ceará, which had recently been visited by an epidemic of small-pox. On inquiring into the facts, he learned that in the ten months following August, 1878, no less that 27,064 burials had taken place in one cemetery, and 13,000 in another—40,000 out of 70,000 had died; and yet there are anti-vaccination "cranks" extant who ask us to neglect the *only* effectual preventive!

One of the most striking testimonies to the mischief that a knot of active anti-vaccinationists can do is shown in the experience of Stuttgart, the capital of Würtemberg, between the years 1864–69. Stuttgart was the focal point from which radiated anti-vaccination influence, and, in consequence, not only many private citizens but the militia of that city were "unprotected." It had a population of 1,760,000 souls—less than New York—yet in the five years indicated there were no less than 11,092 cases and 800 deaths. During that time there were 34 cases in the army of the whole country, but not a death; and now that vaccination and revaccination are not only compulsory, but done under a faithful inspection, the German army is the bright, conspicuous example, shining like a beacon, for all the world to follow. If Germany could build an impassable fence between herself and Russia, the whole country would soon show itself completely freed from the pest; but there is always an immigration from Russia into Germany of persons from that land, where the persistence of cholera shows the inability to cope with epidemics.

NATIONAL SANITATION UNDER THE AUSPICES OF THE U. S. MARINE HOSPITAL SERVICE.

ABSTRACT OF ADDRESS OF DR. WALTER WYMAN, SUPERVISING SURGEON-GENERAL U. S. MARINE HOSPITAL SERVICE, BEFORE THE COMMITTEE OF INTERSTATE AND FOREIGN COMMERCE, H. R., IN THE MATTER OF ESTABLISHING A BUREAU OF PUBLIC HEALTH IN THE DEPARTMENT OF THE INTERIOR, WASHINGTON, MAY 18TH, 1894.

. . . As is known to you, under the present law the Surgeon-General of the Marine Hospital Service is charged with all the duties pertaining to quarantine and quarantine regulations which are provided for in the act of February 15th, 1893. The regulations must be approved and promulgated by the Secretary of the Treasury. To aid me in preparing these regulations I called a board of medical officers of the Marine Hospital Service. This board, with suggestions from myself, framed the rules and regulations to be observed with regard to vessels, passengers, and cargo in foreign ports and on the voyage.

For the quarantine rules to be observed at ports of the United States a similar board was called together. All the State and local regulations had been previously examined, and you will remember that the law requires that if any such are found insufficient the Secretary of the Treasury shall make additional ones. It was evident that there were some which were deficient, and a minimum standard was therefore determined upon—namely, a code of rules which should be required at every quarantine station in the United States. A uniform quarantine code for the maritime ports of the United States had long been the desire of quarantine and sanitary officers; for years it had been their chief complaint that no uniformity existed, and heretofore all efforts to this end, through conventions and otherwise, were futile. For the first time in the history of the United States such a code was prepared, adopted, and promulgated last season under the law of February 15th, 1893.

After these rules and regulations for domestic quarantine had been prepared by the board I have just mentioned, and before the adjournment of this board, a conference was called by myself of the quarantine officers of the Atlantic and Gulf coasts, representing the cities and ports of Portland, Boston, Providence, New Haven, New York, New Jersey, Philadelphia, Wilmington, Del., Baltimore, Norfolk, Wilmington, N. C., Charleston, Savannah, Florida, Mobile, New Orleans, and Texas.

This conference was called to order March 16th, and remained in session two days, the first day being devoted to a consideration of the rules which had been prepared, and discussion thereof, with the understanding that there would be no vote. The second day the rules were again read *seriatim*, discussed, and voted upon. After adjournment of the conference the Board continued its labors, paying special attention to the views expressed in the conference. The rules thus perfected were then presented by myself to the Secretary of the Treasury, were promulgated by the latter April 4th, and a letter inclosing them was sent to each maritime quarantine officer, calling attention to the law and to the fact that these were minimum requirements, and requesting an expression of willingness and ability to execute them, to which satisfactory responses were received.

Now, for the enforcement of these rules for domestic quarantines, the following additional regulation was promulgated by the Secretary of the Treasury, after its legality had been affirmed by the Attorney-General of the United States. The regulation and the instructions in accordance therewith have been issued in the following form :

INSTRUCTIONS TO MEDICAL OFFICERS OF THE MARINE HOSPITAL SERVICE DETAILED TO MAKE INSPECTIONS OF STATE AND LOCAL QUARANTINES.

Treasury Regulation.

In the performance of the duties imposed upon him by the act of February 15th, 1893, the Supervising Surgeon-General of the Marine Hospital Service shall, from time to time, personally or through a duly detailed officer of the Marine Hospital Service, inspect the maritime quarantines of the United States, State and local, as well as national, for the purpose of

ascertaining whether the quarantine regulations prescribed by the Secretary of the Treasury have been or are being complied with. The Supervising Surgeon-General, or the officer detailed by him as inspector, shall at his discretion visit any incoming vessel, or any vessel detained in quarantine, and all portions of the quarantine establishment for the above-named purpose and with a view to certifying, if need be, that the regulations have been or are being enforced.

J. G. CARLISLE,
Secretary.

In conformity with this regulation and the printed instructions, all the quarantines of the United States from Maine to the State of Washington are subject to periodical inspection under the supervision of the Marine Hospital Bureau. In accordance with this regulation, also, an inspection was maintained at the New York Quarantine the greater part of last season, both to render such aid as might be given and to insist upon the enforcement of the Treasury regulations.

There are no more experienced men in both the theoretical and practical workings of quarantine than are to be found in the medical corps of the Marine Hospital Service. There are scientific investigations being constantly made in the laboratory of the service, which is as well supplied with every modern apparatus or instrument as perhaps any laboratory in the United States. These investigations relate principally to the cause, nature, life history, and prevention of epidemic diseases; and it may be added that instruction is given in this laboratory both to the officers of the service and to local quarantine officers in biological diagnosis of contagious diseases.

In framing regulations, the Marine Hospital Bureau, besides its own scientific and practical officers, has the assistance of the law officer of the Treasury Department, detailed from the Department of Justice, and the benefit of the counsel and advice of the heads of the several divisions in the Treasury Department conversant with all the executive and legal details which might require consideration, and finally, of the Assistant Secretary and the Secretary of the Treasury himself. It is difficult to conceive of any question connected with quarantine regulations which cannot be decided properly and promptly by the Marine Hospital Service and the Treasury Department to which it belongs.

Now, hand in hand with the making of quarantine rules goes their execution. I contend that they can be best executed when emanating from the same body or service that is charged with their practical application. In the proposed scheme of having one department make the rules and another execute them, I can readily see the possibilities of clash, the shifting of responsibility from one to the other, and crimination and recrimination after the resultant disaster.

Moreover, speaking for the Marine Hospital Service, to have an outsider make the rules and command us to enforce them would deprive the corps of its *esprit*, than which nothing is more essential for effective service. It is this *esprit du corps* that has gained for the service its successes in the past.

Maritime quarantine, as its name implies, relates to commerce, to vessels and crews, and has intimate relations with the shipping laws, the customs service, immigrant inspection, etc., all of which are regulated by the Treasury Department. . . . A vessel arrives at quarantine; the customs inspectors are interested in that vessel as well as the quarantine officers. The Revenue Cutter Service may be interested in that vessel for violating the navigation laws. The Immigration Service is very much interested because it carries immigrants, and so is the Bureau of Navigation, which looks after the fines and penalties.

The Inspection Service of Steam Vessels looks to the *personnel* of the pilots, and, if the vessel is of American registry, has supervision of the boilers, air space, ventilation, etc., and the Marine Hospital Service cares for the sick and disabled among the crew. Now, these are all Treasury bureaus or divisions, and it sometimes happens that in the exercise of their various functions, with regard to this vessel, the different bureaus of the Treasury Department may have some misunderstanding. Customs authorities have claimed right of precedence over quarantine authorities in boarding vessels. Immigrant inspectors have claimed the same. There are certain precautions to be taken by the customs inspectors when a vessel is in quarantine. How necessary, therefore, for all to be under one head. There would be unavoidable clash and maladministration, with two heads of large departments of the Government attempting to manage subtle affairs upon a big ocean vessel arriving at an American seaport.

Much has recently been said regarding internal sanitation and internal quarantine, and the necessity of suppressing the ordinarily contagious diseases (diphtheria, typhoid-fever, tuberculosis, etc.), irrespective of the great epidemic diseases, cholera, yellow-fever, and small-pox; and in the bill under consideration it is provided (Section 12):

That the Commissioner of Public Health shall, under the direction of the Secretary of the Interior, co-operate with and aid State and municipal health authorities in the execution and enforcement of the rules and regulations of such authorities, and in the execution and enforcement of the rules and regulations made by the commissioner of public health and approved by the President of the United States, to prevent the introduction of contagious or infectious diseases into the United States from foreign countries, and into one State or Territory or the District of Columbia from another State or Territory or the District of Columbia.

The above is presented as though it were a new provision of law, whereas a like provision already exists in Section 3 of the act approved February 15th, 1893.

Under this act regulations have been made, promulgated, and executed under the direction of the Secretary of the Treasury, to prevent the spread of yellow-fever from one State to another, and other regulations have been prepared to prevent the spread of other contagious or infectious diseases.

Concerning the collection of information regarding the prevalence of contagious and epidemic diseases in this and other countries, and the publication of the information thus obtained in a weekly bulletin, you have before you a bound volume of such weekly bulletins for the year ending December 31st, 1893. This volume, published by the Marine Hospital Bureau, contains, first, domestic information—viz., abstracts of the reports of States and municipalities, special reports concerning contagious diseases, mortuary reports from the different cities of the United States, reports concerning immigration, and reports from the Department of Agriculture, showing the temperature and rainfall in the various cities from which mortality reports are received; second, foreign information, received through the State Department and from officers of the Marine Hospital Service stationed abroad, relating to like subjects.

Concerning the experimental investigation into the causes of disease, I have to state that such experiments are going on constantly in the laboratory of the Marine Hospital Service, and that special commissions, either under present laws or by special resolution of Congress, may be appointed at any time for this purpose. I have here a volume prepared by Dr. Shakespeare, who was specially commissioned by the President to visit Europe and India and prepare a report upon the prevalence, history, and origin of cholera. His expenses were paid from the "epidemic fund," and without special legislation.

I will further state that, under the auspices of this Bureau, during the past year, a commission, consisting of Surgeon Irwin, of the Marine Hospital Service, and Dr. Walter Kempster, an expert, visited all portions of Europe, as well as Egypt and Palestine, in further investigation of the prevalence of cholera, its method of introduction into Europe, and the special sources of danger to the United States through the importation of merchandise from infected countries.

Passed Assistant Surgeon J. J. Kinyoun was detailed, in 1890, to visit Berlin and Paris for the purpose of investigating and familiarizing himself with the methods of the distinguished professors Koch and Pasteur.

Other experts have been employed by the Treasury Department and sent to points of danger, their expenses paid out of the "epidemic fund." The inspections made by them have embraced the cities of Central America and Mexico.

The annual reports of the Marine Hospital Service contain numerous articles upon the cause, life history, and prevention of contagious diseases, and in further illustration of the scientific work of the Bureau, I would invite your attention to the report of the present House Committee on Ventilation and Acoustics, just published, containing the results of a scientific examination made by an expert officer of the Marine Hospital Service, of the air of the House of Representatives for the detection of impurities therein deleterious to health.

There remains, therefore, of the avowed purposes of the bill to be mentioned only statistics regarding marriages, births, and deaths. The Census Bureau furnishes much of this information, though it is admitted, not as frequently as could be desired.

I by no means mention the above facts for the purpose of asserting that all is being done that is desired, but simply to show the committee what is being done, and that with some extension of present organization and facilities much more could be done without breaking up existing institutions, without disturbing organizations that have reached their present degree of efficiency because founded on the necessities of the Government, and because year by year they have been strengthened and improved by intelligent administration and congressional action.

A few words now regarding the organization and scope of the Marine Hospital Service.

MEDICAL CORPS.

The medical corps of the Marine Hospital Service, as will be seen by the small blue book before you, consists of a supervising surgeon-general, 16 surgeons, 26 passed assistant surgeons, 19 assistant surgeons, and 93 acting assistant surgeons, making a total of 154. The regular corps—that is to say, all of the above excepting the acting assistant surgeons—are appointed by the President after thorough physical and professional examination. The acting assistant surgeons are appointed by the Secretary of the Treasury, on recommendation of the Supervising Surgeon-General, who satisfies himself as to the professional qualifications of the officer. The employment of acting assistant surgeons in times of emergency for temporary service, and the discontinuance of their services when the emergency is over, furnishes an excellent method of increasing or contracting the medical corps as occasion requires.

The acting assistant surgeons are men who have been long in the service, and are trained in Government routine. When newly appointed in emergency they are usually assigned to a marine hospital under the observation of the commanding officer and one of the older assistants, detailed to meet the emergency.

I have heard that intimations have been made concerning the youth and inexperience of the members of the regular corps, the absurdity of which is shown by a table which I have caused to be prepared giving the age and date of graduation of every officer of the service. From this table it will be seen

that the average age of the 16 surgeons is 50 years, the average age of the 26 passed assistant surgeons is 35 years, and of the 19 assistant surgeons, 29 years.

. . . Members of this corps are fairly representative of the medical profession of the country. Many of them, in spite of the fact that they are subject to change of station every four years or oftener, have held and are now holding professorships in the medical colleges of the cities in which they are stationed.

Concerning the new admissions to the corps, the law requires that they shall be appointed to the grade of assistant surgeon only, and provision is made for subsequent promotion. The examination is held once or twice a year, as occasion requires, and the applicant must pass a very severe test, making an average of 80 per cent on all branches. The successful candidates are relatively few. For example, this month, out of 29 who appeared for examination, only 4 made the required grade. These new appointees represent the very best men among the newer graduates of the colleges; but very rarely do they come direct from the medical college, most of them having had hospital or private practice before seeking admission to the corps. Out of the total 61 medical officers, 53 had hospital practice before entering the service, 7 were engaged in private practice, and only 2 had neither private practice nor hospital practice.

There are 19 hospitals owned and operated by the service, and 95 additional relief stations, where at contract hospitals seamen are admitted and treated by acting assistant surgeons.

DISTRIBUTION AND QUALIFICATIONS OF THE CORPS.

The officers of the Medical Corps just mentioned are stationed in every important port on the coast, lakes, and rivers, and being trained in the execution of Government business, become valuable agents for the immediate execution of any sanitary measures which may be imposed upon them by telegraph or otherwise from the Bureau. It is always possible for the Marine Hospital Service, in any part of the country, on the shortest notice, to have qualified agents at a place of danger. There is scarcely an officer of the regular corps who has not had actual quarantine experience, and the corps numbers

among its members men whose names have become national by reason of their effective service in various epidemics. The corps embraces a number of skilled bacteriologists, also men who have had large practical experience in the treatment of yellow-fever and other contagious diseases, men thoroughly acquainted with all the military duties connected with sanitary cordons, detention camps, and with the methods of train and vessel inspections, scientific disinfection, etc. The effectiveness of this corps is the result of special care exercised to secure within it men who, by natural inclination and special education, are fitted for sanitary work, and is also the result of long and active experience.

The Marine Hospital Service dates as far back as 1798. It was reorganized and put upon its present basis in 1871. Though established for the purpose of caring for sick and disabled seamen of the merchant marine of the United States, there have been from time to time other responsibilities imposed upon it, growing out of the necessities of other branches of the Government with which it is intimately and necessarily associated. For example, the Revenue Marine Service, a branch of the Treasury Department, relies upon the Marine Hospital Service for the physical examination of its officers and men and their professional treatment when sick or disabled. The Life-Saving Service relies upon the Marine Hospital Service for the physical examination of the keepers and surfmen. Hundreds of rejections of physically unsound men seeking to become surfmen have been made by the officers of the Marine Hospital Service. The Steamboat Inspection Service, a most important branch of the Treasury, relies upon the medical officers of the Marine Hospital Service for a determination as to the ability of the pilots to distinguish signal lights, and large numbers of applicants for pilots' license are annually rejected by the officers of this service on account of color blindness. The Immigration Bureau relies by law upon the Marine Hospital Service for the medical inspection of immigrants.

Naturally, too, by reason of the intimate association of the Marine Hospital Service, through its sailors, with shipping and commerce, the National Government has imposed upon this service the execution of the national quarantine laws, to

which reference has already been made. I will only add here that so far as national quarantine is concerned, the service, by tradition and constant activity, save for a period of four years, is the natural executor of the same. National quarantine received its first executive impulse through the first Surgeon-General of the Marine Hospital Service, Dr. John M. Woodworth, in 1878. Both prior and subsequent to this last date the Bureau has controlled, wholly or in part, epidemics of yellow-fever and of small-pox; notably yellow-fever in 1873, 1876, 1877, 1878, 1882, 1887, 1888, and in 1893, the Brunswick epidemic, when it was confined within the cordon on lines established by the service.

It also took charge of railroad quarantine against small-pox in Canada in 1885, and at Harris Neck, Ga., in 1891, it stamped out the disease.

It had complete control of the quarantine measures against yellow-fever in Texas in 1882, and in Florida in 1888.

THE NATIONAL QUARANTINE STATIONS.

The Marine Hospital Service has under its immediate control 10 national quarantine stations equipped with modern appliances for disinfection of vessels, hospitals for the care of the sick, and barracks, where required, for the detention of suspected immigrants.* These stations are so far remote from populous centres as to be seldom visited, but their completeness and the scientific care exercised in isolation of the sick, the surveillance of those suspected and held under observation, the cleansing and disinfection of vessels, has excited the surprise and commendation of the few members of Congress who have visited one or more of said stations. There is a fleet of 13 vessels connected with these stations, 3 of them being old vessels turned over from the Navy for the purpose of receiving and housing people in quarantine.

* These stations are located at: Delaware Breakwater; Reedy Island, Delaware River; Cape Charles, Va.; Blackbeard Island, Sapelo Sound, Ga.; Brunswick, Ga.; Dry Tortugas, Fla.; Ship Island, Gulf of Mexico, off the coast of Mississippi; San Diego, Cal.; Angel Island, San Francisco Bay, Cal.; Port Townsend, Wash.

CO-OPERATIVE ASSOCIATIONS.

Now, referring to the work done by the Marine Hospital Service for other branches of the Government—namely, the Revenue Marine, the Life-Saving Service, Steamboat Inspection Service, and Immigration Service—a return service on the part of these branches of the Government adds to the strength and ability of the Marine Hospital Service for quarantine work. For example, the Revenue Cutter Service, under the same Secretary as is the Marine Hospital Service, may be called upon at any time, and frequently is, to assist in quarantine measures through the medium of their fleet of vessels. During the past summer revenue cutters have patrolled the southern coast in aid of the quarantine cordon around Brunswick. They have carried medical officers and supplies to the Sea Islands, off the coast of South Carolina, in the sanitary work demanded of the Marine Hospital Service by reason of the great storm. They have furnished vessels for the Marine Hospital Service repeatedly in New York Harbor, and in fact practically form a fleet subject to demand for service at any time in the aid of quarantine. During the past summer, when it was feared that the immigrant detention camps at Camp Low and at Delaware Breakwater, both under the control of the Marine Hospital Service, might of necessity be occupied by immigrants held under observation, an arrangement was made with the Revenue Marine Service for the immediate detail of their enlisted and armed men from the several cutters, to form the necessary guards around these camps, the places of the enlisted men to be supplied by new enlistments on the vessels.

The Steamboat Inspection Service, in return for the examination of pilots, furnishes experts to examine the hulls, boilers, and machinery of the vessels which belong to the Marine Hospital Service.

The Life-Saving Service, on request of the Supervising Surgeon General of the Marine Hospital Service, is required by its superintendent to watch carefully for all dunnage and other stuff that might float ashore from infected vessels, thrown overboard before said vessels reach port; to gather up with rakes such material and burn it.

The presence of medical officers at the immigrant reception

stations at the several ports enables the Bureau to keep fully informed with regard to immigrants and their baggage, which constitute so large a proportion of the danger in the matter of epidemic importation.

OPERATIONS OF MARINE HOSPITAL SERVICE.

The operations of the Marine Hospital Service, independent of quarantine, during the fiscal year ended June 30th, 1893, may be summarized as follows: Total number of sailors treated in the hospitals and dispensaries, 53,317; of which number 14,857 were treated in hospital, the remainder being office or dispensary patients. There were 1353 pilots examined for color blindness, of which 48 were rejected. Ten hundred and ninety-five surfmen and keepers of the Life-Saving Service were examined, of which number 41 were rejected for physical causes. Two hundred and seventy-nine seamen of the Revenue Marine were examined before shipment as to their physical fitness, and 22 were rejected.

With regard to funds, the quarantine service is maintained by a yearly appropriation for the ordinary maintenance of the ten national quarantine stations. In addition to this there is what is known as the "Epidemic Fund," which is placed at the disposal of the President, to be used under his direction in any manner he sees fit, to prevent the introduction and spread of epidemic diseases. It is from this fund that the expenses of the foreign quarantine and extraordinary precautionary measures in this country have been paid.

The Marine Hospital establishment, independent of quarantine, is maintained by a continuing fund derived from the tax on foreign tonnage.

HAFFKINE'S CHOLERA INOCULATION.

In a report made by Dr. W. J. Simpson, Health Officer of Calcutta, on inoculation with the cholera vaccine practised by Haffkine, published in the *Indian Medical Gazette*, the following results are detailed:

"The inoculations were done in various parts of the town where cholera was prevalent, and there are several instances of cholera being apparently arrested by the inoculations. But the most important observations are to be obtained under

condition when the disease continues and allows of a compari son between the inoculated and the non-inoculated. Such a condition presented itself in the case of a local epidemic, which took place around two tanks in Kattal Bagan Bustee, Ward 19, occupied by about two hundred people. In this bustee, about the end of March, two fatal cases of cholera and two cases of choleraic diarrhœa occurred. The outbreak led to the inoculation of 116 persons in the bustee out of the 200. Since then nine cases of cholera, of which seven were fatal, and one case of choleraic diarrhœa, have appeared in the bustee, and it is a very extraordinary fact that all these ten cases of cholera have occurred exclusively among the uninoculated portion of the inhabitants, which, as stated, forms the minority in the bustee, while none of the inoculated have been affected."

Dr. Simpson describes the method of obtaining the cholera vaccine and its application, as follows :

"The problem which, therefore, had to be solved in the preparation of a vaccine against cholera, was to find the means of fixing the virus in a well-determined strength, and to be able to keep it for an indefinite time at that known strength. Professor Haffkine solved the problem. He discovered a means of engrafting on animals the cholera microbe, and cultivated it indefinitely on such animals. This gave him vaccine. At the same time he was able to increase the cholera microbes to a strength which produced with certainty a specific infectious disease on animals, and against which he was able to protect them.

"For cholera inoculation there are two vaccines, one mild, the other strong. For a complete vaccination it is necessary to inoculate twice ; first of all with the mild vaccine, which produces some pain at the seat of inoculation, discomfort, and fever for about one day ; a period of five days is allowed to elapse ; and then a second inoculation is performed with the second or strong vaccine. This second inoculation produces a similar form of malaise to that caused by the first. This discomfort, on the whole, is milder and of shorter duration than that of vaccination against small-pox. Its harmlessness was established by very careful and patient observation on medical men and scientists, who were inoculated in Europe soon after the discovery."

THE MEDALS, JETONS, AND TOKENS ILLUSTRATIVE OF SANITATION.*

By Dr. H. R. Storer, of Newport, R. I.

4. *Mineral Springs.*

The United States.

2167. Obverse. W. D. Crumbie | Soda | Water | Cor. of Bowery & Houston St. (N. Y.)

Reverse blank. German silver. 16. 25 mm. Extremely rare. In the collection of Mr. Francis W. Doughty, of Brooklyn, N. Y.

In addition to the John Matthews tokens, Nos. 223 and 224, there are the following :

2168. Obverse. Head, to right. Inscription : John Matthews Exergue : 1808–1870

Reverse. A boy striking a bear that is tampering with a soda reservoir, upon the head with a wrench. Behind, a soda fountain. Exergue : 1882 Bronze, gilt. 28. 45 mm. In my collection.

2169. Obverse. Head, to left. Beneath : K. Müller F. Inscription : John Matthews Exergue : 1832–1883

Reverse as preceding. Bronze, gilt. 38. 45 mm. In my collection.

2170. There is a second die of No. 215 (Randall, Baltimore) similar to the first, save that figure upon monument has a wreath in right hand, while in the other it is absent. Silver. 11. 17 mm. In my collection.

England.

I am at last enabled to give the description of a medal of which I previously merely knew the existence.

(1735.) Obverse. The principal bathing-places of England, with miles distant from London. Exergue : J. Ottley, Medallist, Birmingham. To right, Scotch Universities ; to left, English d°

* Continued from page 57.

Reverse. Within circle: Miles Distant From London. Between edge and this circle, the names of the principal towns of England, with figures to correspond. Spink & Son, *Num. Circular*, September, 1893, p. 365, No. 4.

2171. Obverse. The spa-house, facing. Inscription: The—Royal Malvern Wells—Spa Exergue: Malvern

Reverse. The royal coat-of-arms, with motto Honi Soit Qui Mal Y (Pense), and upon a band: The—Marvellous—Water Beneath: From Pole To Pole Let The Fame | Be Unfurled | Of The Marvellous Water | The Best In The World | For Every Known Ailment | As Thousands Can Tell | Who Have Drank And Were | Cured At The | Royal Malvern | Well Brass. 22. 35 mm. Edges beaded. In my collection.

FRANCE.

2172–73. There appear to be medals of Salines that were struck as early as 1540 and 1557. Florange Cat. 5, 1893, No. 543.

(247.) Salines De L'Est. Inscription: Gaudin Ministre Des Finances. Millingen, *Suppl. Hist. Mét. Nap.*, p. 99, pl. LIV., No. 304.

2174. As preceding, but Duc De Gaete Ministre (etc.). *Ibid.*, p. 100, pl. LIV., No. 305.

HOLLAND. *Amsterdam.*

2175. Obverse. The arms of Holland; a crowned armorial shield, supported by crowned lions. Motto, beneath: Je Maintiendrai Inscription: Piccaluga & G. Fourniss^{e} De S. M. Le Roi Des P(ays), B(as). Exergue: a dot.

Reverse. A syphon. At its left, an anchor, incused. Inscription: Etabliss^{t} D'Eaux Minerales Gazeuses Factices.

Copper. 15. 24 mm. In my collection.

GERMANY. *Grenzach, Baden.*

2176. Obverse. Emilienbad | * | Grenzach | —.—

Reverse. Gut Für | * 50 * | Pfennig Silver. 14. 22 mm. Edges milled. In my collection.

2177. As preceding, save that numeral on reverse is 10. Brass. 13. 19 mm. Edges milled. In my collection.

Halle, Saxony.

2178. Obverse. Bust, to right. Beneath: Jos·Schevfel·F. Inscription: Joannes—Sebastian·Clais.

Reverse. The salt-works. Carolo·Th·Palat·Boi·Princ· Elect·Vocante·Et·Avspice. Exergue: Salinas·Halae·Divitis· | Arte Ditavit | MDCCLXXXII. Silver, bronze, tin. 50 mm. Spink & Son, *Num. Circular*, March, 1894, p. 597, fig.

Island of Juist, Hanover.

2179. Obverse. Nordseebad Juist (the commencing N and final *t* connected across field by a series of dots). Exergue, at right and left, scrolls.

Reverse blank. Brass. 20. 30 mm. Edges milled. In my collection.

Schleusingen, Prussia.

2180. Obverse. Restaurant | Z. | Badehaus | (rosette) | Schleusingen

Reverse. A glass. Gut (etc.) Exergue, a star. Brass. 14. 20 mm. Edges milled. In my collection.

Sulz, Würtemberg.

2181. Obverse. Busts of Joachim Friedrich and Carl Leopold Von Beust. Beneath, arms and inscription: Beustii Fratres

Reverse. Angel with laurel branch above implements. Inscription: Salinarvm Svlzia (etc.) Iron. By C A B, in 1852, upon the centennial of the works. Salomon Cat., Dresden, November 14th, 1893, No. 2867.

AUSTRIA. *Karlsbad.*

2182. Obverse. Statue of Karl IV. Inscription: Der Gründer | Carlsbads 1858

Reverse. Laurel wreath. Silver. 9. 13 mm. Donebauer, *Böhmische Münzen*, p. 464, No. 4173.

2183. Obverse as preceding, but upon pedestal: Carl IV

Reverse. Within laurel wreath: Zur | Fünfhundert | Jaehrigen | Jubelfeier | Carlsbads | 1858. Silver, tin. 12.

20 mm. (Somewhat similar to No. 1748.) *Ibid.*, p. 464, Nos. 4174–75.

2184. As No. 269 (Süsses Leben, etc.), but by T. Lerch and C. Höfer. Bronze, tin. 26. 42 mm. *Ibid.*, p. 463, Nos. 4168–69. In my collection.

2185. Obverse. The spring. Beneath: W. Seidan F. Legend: Felix Per Secula Mana Fons Sacer.

Reverse. Erinnerung | An Die | 37te Versammlung | Der Deutschen | Naturforscher | Und Ärzte | In Karlsbad· | 1862. Bronze. 28. 44 mm. *Ibid.*, p. 464, No. 4179.

Sadská, Bohemia.

2186. Obverse. The bath buildings. Behind, a tree.

Reverse. Within wreath: Na Pamatku | O Tevrem | Lazni Telezitych | V | Boru Sadskim | 30. Cervence | 1882 (Upon opening the establishment.) Bronze. 19. 28 mm. *Ibid.*, p. 598, No. 5173.

Teplitz.

2187. Wohlthätige Quelle, etc. 1762–1806. Guillemard. With exclamation point after Thal. Silver. 26. 42 mm. *Ibid.*, p. 606, No. 5217.

2188. As preceding, but no exclamation point after Thal. Bronze. 26. 42 mm. *Ibid.*, p. 606, No. 5218.

2189. As preceding, but by C. Höfer. Bronze. 26. 42 mm. *Ibid.*, p. 606, No. 5219.

2190. Obverse. The discovery of the spring. Wohlthätige Quelle Zur Heilung Der Leidenden Menschheit* Exergue: Entdeckung Des | Teplitzer Bader | Im Jahre 762

Reverse. View of the city. Romantisches Thal Froher Rückblick An Ueberstandene Leiden* Exergue: Ansicht | Von Teplitz | In Böhmen. To right: F. Opitz To left: Prag Tin. 26. 42 mm. Very rare. *Ibid.*, p. 606, No. 5221, pl. LXXXII.

2191. Obverse. Bust. Beneath: Kriz Inscription: Franz Josef Kaiser Von Oesterreich* Tin. 17. 26 mm. *Ibid.*, p. 607, No. 5235.

I presume that the following is also Austrian:

2192. Obverse. Flora— | Bad.

Reverse. Bade | Marke | —.— Brass. 12. 18 mm. Edges milled. In my collection.

SWEDEN.

To the medals of Berzelius already given there may be added

2193. Obverse. Bust.

Reverse. Batka Dedic: Plaster. Oval. 20. 31 mm. De La Faille Cat., 1869, Part II., No. 1268.

DENMARK. *Island of Fanöe.*

2194. Obverse. Kur— | Hotellet | Fanó

Reverse. 100 | Ore Silver. 19. 28 mm. Edges milled. In my collection.

2195. As preceding, save numeral on reverse is 25. Silver. 16. 23 mm. Edges milled. In my collection.

2196. As preceding, save numeral on reverse is 10. Silver. 14. 20 mm. Edges milled. In my collection.

2197. Obverse as preceding.

Reverse. Personal Brass. 13. 18 mm. Edges milled. In my collection.

Hellebek, Island of Seeland.

2198. Obverse. Trees and a building, on gable of which: Hellebæk Kro.

Reverse. Hellebæk Kro. | Frantz | Olsen | * Badeanstalt * Brass. 16. 24 mm. Edges milled. In my collection.

SWITZERLAND. *Streitberg, Franconia.*

2199. Obverse. Within beaded circle: Ch. | Pfund | —.— Inscription: Kurhaus Streitberg Exergue, a star.

Reverse. Gut (etc.) Brass. 14. 20 mm. Edges milled. In my collection.

Thal, Canton St. Gall.

2200. Obverse. Within milled circle: Kurhaus | Thal

Reverse. Within similar circle, 25. Silver. Rectangular. 12x12. 18x18 mm. In my collection.

2201. As preceding, save numeral on reverse is 15. Brass. Rectangular. 12x12. 18x18 mm. In my collection.

2202. As preceding, save numeral is 10. Nickel. Rectangular. 12x12. 18x18 mm. In my collection.

Weissbad, Canton Appenzell.

2203. Obverse. A cow, with bell, to left.

Reverse. Within beaded circle : 10 Inscription : Milch—Kur—Anstalt | * Weis * Brass. 14. 20 mm. Edges milled. In my collection.

The following are possibly from another locality in Switzerland :

2204. Obverse as preceding.

Reverse. | Liter | Schweizer | Milchkur— | Anstalt | Fichardstrasse 22. Brass. 12. 18 mm. Edges milled. In my collection.

2205. As preceding, save on reverse ½ instead of 1. Brass. 12. 18 mm. Edges milled. In my collection.

5. *Drainage.*

FRANCE.

2206. Canal de Givors (Lyons). 1784. Silver. Florange Cat. 5, 1893, No. 477.

2207. Canal de Briare (Via Ligeris In Sequanam). 1606. *Ibid.*, No. 624.

BELGIUM.

2208. Liege—Maestricht Canal. 1845. Dirks, *Nederlandsche Peningen*, II., p. 58, No. 640.

SWEDEN.

2209. Obverse. Bust of Carl XIV Johan.

Reverse. Construction of Canal. 1822. Silver. Thieme, *Numismatische Verkehr*, January, 1894, No. 3142.

6. *Sewerage.*

FRANCE.

2210. Jemelle. Construction du cimitière, etc. (By Fisch.) 35. 54 mm. Dupriez Cat. 18, 1893, No. 796.

SWITZERLAND.

2211. Obverse. Within field, the staff of Æsculapius, erect, crossed transversely by a laurel branch. Above: Né Le 11 Dec. 1848 À Benzenschyl (Argovie) Below: 1 Mai 1868 À Weinfelden | 1 Mai 1893 À Genève | — Inscription: 25me Anniversaire De L'Entree En Pharmacie De Burkh. Reber (rosette).

Reverse. A covered urn, upon which: Cremation, surrounded by an ancient mortar, pharmacal jars, etc., backed by branches of mistletoe. Upon edge, the names of H. Bovy, designer, Schlutter, engraver, and Furet, mint-master. Gold, silver, bronze. 24. 37 mm. Spink & Son, *Num. Circular*, September, 1893, p. 362, fig.

ITALY.

2212. Obverse. Within a pearled circle, upon a platform supported by the arms of Milan, a cinerary urn, behind which a palm leaf. To right: L Inscription: * Vermibus Erepti Puro Consumimur Igni * | Indocta Vetitum Mens Renovata Petit.

Reverse. Within laurel wreath tied by ribbon: Al Loro | Presidente | Dr Malachia | De Cristoforis | I Soci | Della | Cremazione. Inscription: Costanza Vince I Pregiudizi Umani | * 1890 * Gold. Comandini, *Rivista Italiana di Num.*, 5, 1892, p. 226, pl. V., No. 8.

7. Diet.

Dr. John Milner Fothergill (1841–88), of London. Writer upon Dietetics.

2213. Obverse. Bust, facing. Inscription: John Milner Fothergill Born April 11th 1841 | Died June 28th 1888.

Reverse. Within wreath of foxglove and laurel: Milner Fothergill Medal In Therapeutics Engraver: Pinches London. Gold. Prize medal of the University of Edinburgh. I owe its description to Dr. F. P. Weber, of London.

IX. *Famine.*

HOLLAND. *Leyden*, 1574.

2214. Obverse. 250e Verjaring Van Het Belgen | Outzet Der Stad Leiden Gevierd | 3 en 4 October 1824.

Reverse. An angel with scroll, upon which : Nae zWarte hVngersnoot | gebraCht had tot de DooD | aLnaest | zes DVIzent zoo Veel | WI CUasten Wenschen. Silver. By A. Bemme. But one struck. Dirks, *Nederlandsche Peningen*, i., p. 189, No. 239. Unmentioned by Pfeiffer and Ruland. See also under The Plague.

1825.

2215. Obverse. An inundation scene. Beneath : Adrs. Bemme. J. Z. Fec. Inscription : Ter Gedachtenis van den watersnood in Nederland op den 4^{den} en 5^{den} February des jaars 1825

Reverse. Under the All-seeing eye, upon a scroll, some lines from H. H. Klyn, and the names of the inundated provinces : Noord—Holland * Vriesland * Overyssel * Gron ; & Oml : * Zeeland Gelderland. Copper. Unmentioned by P. and R. I have the description from Dr. J. J. B. Vermyne of New Bedford.

1855.

2216. Obverse. Crowned arms of the province of Utrecht supported by lions, resting upon a console crowned with wreaths.

Reverse. Within wreath of oak leaves : Voor | bewegen diensten | by den | Watersnood | in | 1855 By Van der Kellen. Silver, bronze. Unmentioned by P. and R.

2217. Obverse. Bust, to right. Beneath : V. d. K. F. Inscription : Willem III. Koning—Der Ned. G. H. v. L.

Reverse. Orange and laurel branches, with a crowned scroll, upon which : De Koning—Aan . . . Inscription : Watersnood | van 1855 Unmentioned by P. and R. I owe these descriptions also to Dr. Vermyne.

1861.

2218. Obverse. Head, to right. Beneath : Karel Wiener. Inscription : Willem III—Koning Der Nederlanden

Reverse. Inundation, with the King in a boat in background at left, and Charity upon a plank in front, relieving the distressed. On base : K. Wiener.—L. J. Lefebre Ed. Inscription : Orange En Nederland—Bij Den Watersnood

1861 Silver, bronze. 40. 70 mm. Dirks, ii., p. 223, No. 842. Unmentioned by P. and R. In my collection.

2219. Obverse. The arms of Guelderland, etc. To left: S. C. Elion F. Upon a column: Oranje | Naast | God.

Reverse. Within an oak wreath: Willem III | Jan. – Feb. 1861 Inscription: Door Weldadigheid Onderstennt Hij Zijnen Troon. | Spr. 20 V. 28 B. Bronze. *Ibid.*, ii., p. 225, No. 843. Unmentioned by P. and R.

2220. Obverse. Bust, to right. Inscription: Willem III Koning Der Ned. G. H. V. L.

Reverse. A partially unrolled scroll, crowned and between orange and laurel branches. Inscription: Watersnood Van 1861. *Ibid.*, ii., p. 226, No. 844. Unmentioned by P. and R.

2221. Obverse. Bust. Inscription: Willem III Koning Der Nederlanden Groot—Hertog Van Luxemburg.

Reverse. Crowned scroll between orange and laurel branches, upon which: De Koning Aan . . . Inscription: Watersnood Van 1861. Silver, bronze. *Ibid.*, ii., p. 226, No. 845. Unmentioned by P. and R.

BELGIUM. *Tournai*, 1546.

2222. Dupriez Cat. 18, 1893, No. 1307. Unmentioned by P. and R.

GERMANY.

In addition to the medals of Virchow already given, Nos. 401, 1986, 1987, 1988 and 1989, there is the following:

2223. Obverse. Bust, facing, and to left. Upon breast, crossed palm and laurel tied by ribbon. Below, to right: Oertel Berlin D. Upon lower edge: I. Götz Sc. E. Deifenbeck Fec. Inscription: Professor Dr.—Rud. Virchow

Reverse. Within a beaded circle, Aesculapius, laureated and with his staff, sits upon an irradiated throne, each of whose arms is a statue of Isis. Under his feet, the globe; behind him, stars. Inscription: X. Internationaler Medicinischer Congress | * Berlin 1890 * White metal. 44. 70 mm. In my collection.

LANDSBERG AM WARTHE, PRUSSIA. 1785 AND 1888.

2224. Obverse. A boat passing through an open bridge which is level with the water. Inscription: Stand Des Was-

sers In Landsberg a/W. 4.81 m.—1.7. 1785. 4.89 m. 2.4. 1888.

Reverse. Durch Gottes Gnade Alle Wartedeiche Im Landsberger Kreise Gehalten. Alle Aus Den Fluthen Der Netze Gerettet. 1888. 23. 35 m. Oertel, *Verzeichniss* etc., Dec., 1892, No. 446. Unmentioned by P. and R.

Silesia, 1847.

2225. Obverse. Three peasants kneeling. At left, a house and pine tree; at right, a circular temple and four poplars. Above, in radiant triangle, the eye of God. Inscription: Grosse Theurung, Wenig Nahrung. Exergue: Unser Taeglich Brodt | Gieb Uns Heut. | —.—

Reverse. Within field: 1847 | W. Weitzen 11 Rth. | Roggen 10″ | Erbsen 9″ | Gerste 8″ | Hafer 3½″ | Kartoff: 2″ Inscription: In Schlesien Galt Der Sack Oder 2 Pv. Scheffel (rosette). Tin. 28. 43 mm. Edges beaded. In my collection. Unmentioned by P. and R., whose No. 217 it resembles in some respects, though different in others.

AUSTRIA.

2226. Friedland, Bohemia. 1805. Tin. 37. 57 mm. Donebauer, *Böhmischer Münzen*, p. 474, Nos. 42, 43. Unmentioned by P. and R.

SWITZERLAND.

Mr. Paul Stroehlin, of Geneva, considers that No. 622 (No. 206 of P. and R.) is of the Swiss Confederation instead of Würtemberg, and that No. 559 (No. 183 of P. and R.) is of Zurich instead of Munich. Both of them are in my collection.

In this connection (Famine medals) may be included that of the destruction of the town of Glarus by fire in 1861, the loss having been eight millions of francs.

2227. Obverse. Ruins of the city: mountains and clouds behind; a graveyard in front. To left, above: J. Siber Exergue: an armorial shield, above which: Glarus At sides: Durch Feuer—Zerstoert | Am 10 V.—11 Mai | 18—61

Reverse. Within oak branches tied by ribbon: Gross | War Die Noth, Grösser | Die Bruderliebe! | Dafür Dankt

Das | Wiederstehende | Glarus. Tin. 35. 55 mm. I have been enabled to examine this medal through Prof. S. Oettinger, of New York.

ITALY. *Padua*, 1540.

2228. Obverse. Bust, to right, of Geronimo Cornelio.

Reverse. Distribution of food. Silver. Armand, *loc. cit.*, i., p. 180, No. 12. Unmentioned by P. and R.

(*To be continued.*)

SUNSHINE AND MICROBES.

By PERCY FRANKLAND.

NEVER until the latter half of the present century have the full meaning and significance of the ancient sun worship been properly understood, for it has required the magnificent generalization of the conservation of energy to enable us to comprehend how almost every exhibition of force with which we are acquainted on the earth is wholly due, either directly or indirectly, to the influence of the sun through those rays which reach us after traversing 93,000,000 miles of space. Of the whole energy sent forth by the sun we know that only an excessively minute fraction, not more than $\frac{1}{2300000000}$, is intercepted by the earth at all. But in spite of the enormous distance traversed and the small fraction of this radiant energy which we are only able to "trap," modern science has shown us that we owe almost everything that we have to its agency, and the remarkable manner in which it controls the phenomena of our earth is daily receiving fresh illustration and support.

One of the most novel and extremely interesting revelations concerning the sun's terrestrial influence has been recently made in connection with the life of micro-organisms. As every one knows, microbes, while capable of performing the most indispensable services to man in such important directions as the breaking up of refuse organic matter, the fertilization of the soil, the production of alcohol, etc., may and do be-

come extremely objectionable when they venture outside their particular spheres of utility.

The principal difficulty which is experienced in keeping these micro-organisms in their proper place lies on the one hand in their extreme minuteness, which enables them to be easily carried about from one place to another as living dust, and secondly in their extraordinary power of rapid reproduction. Thus they are not only remarkably difficult to exclude from our surroundings, but when once introduced, even only as a few isolated individuals, they often multiply with such extreme facility that they soon force themselves upon our notice in many different ways. This is easily conceived when it is remembered that, under favorable conditions, a new generation of bacteria may be inaugurated every twenty minutes or half hour. Thus it can be calculated that if such multiplication went on without let or hindrance, a single bacillus would in the course of twenty-four hours have given rise to a progeny four times as numerous as the whole population of London, while at the end of forty-eight hours their number would be represented by the wholly unmanageable figures—280,000,000,000,000 !

On being confronted with such an alarming possibility as this, we are naturally led to inquire, What are the agencies at work which prevent its coming to pass and being realized? Several agencies readily suggest themselves, such as the limited amount of food material available under suitable conditions for their nutriment, adverse circumstances of heat or cold, as well as other unfavorable surroundings, etc. ; but it is not to these I would refer, but rather to one agency which has only recently begun to be understood and appreciated—viz., the power of sunshine to destroy these micro-organisms.

It is not a little gratifying to know that the first and most important step in revealing the cleansing and disinfecting properties of sunshine was made in this country about sixteen years ago by two Englishmen of the names of Downes and Blunt. These investigators established the remarkable fact that if certain liquids capable of undergoing putrefaction, or in common parlance, of "going bad," were exposed to the direct rays of the sun, they remained perfectly sweet, while exactly similar liquids kept in the dark became tainted and

exhibited innumerable bacteria under the microscope. In this way the lethal action of the sun's rays as regards this world of micro-organisms was shown for the first time, and quite a new aspect given to the healthy and inherent craving which we feel for light in our houses and general surroundings.

Numerous most important and interesting experiments were made by these investigators with the object of finding out how these wonderful results were brought about, and upon what factors they were dependent. In the first place, it was ascertained that the oxygen of the air had a marked effect in assisting the sun's work, and that the bacteria suffered more from the sun's rays if the proportion of oxygen was increased, and less if it was diminished, thus clearly pointing to processes of oxidation as being the cause of the phenomenon. Recently M. Momont, in the Institut Pasteur, has obtained more exact information, confirming these experiments by exposing the bacilli of anthrax to sunshine in the presence and absence of air, with the result that while the anthrax bacilli exposed to the sun in the presence of air were killed in two and a half hours, similar bacilli placed in a vacuum were still alive after fifty hours' exposure to sunshine.

The next problem to be attacked was to ascertain whether all the solar rays were equally responsible for this important result, or whether the different colored rays composing the sun's beams produced different effects, as is known to be the case in those important vital processes which go on in green plants.

Many investigators besides Downes and Blunt have bestowed attention upon this interesting question, but it was perhaps first most successfully attacked by Dr. Geisler, of St. Petersburg, now some two years ago. This investigator decomposed the white sunbeams by means of the prism, and then exposed typhoid bacilli to the light of the various parts of the spectrum. The rays at the red end he found had little or no effect at all on the growth of the bacilli, while the most powerfully deleterious action was obtained in the ultra-violet, the effect becoming less and less marked in passing from this to the red. On this point, in fact, all investigators are agreed—that the rays which exert this destructive or inhibiting effect

on bacterial life are precisely those which also exert the most powerful action on the ordinary photographic plate.

Of much interest also is the comparison made by Dr. Geisler of the potency of the sun and the electric light respectively in destroying bacterial life. Thus, while from two to three hours' sunshine was sufficient to produce a most markedly unhappy result in the condition of the typhoid bacillus, it required an exposure of no less than six hours to the beams of an electric arc lamp of 1000 candle power, and at a distance of only thirty-nine inches, to produce a similar effect, thus clearly proving the great inferiority in this respect of this most dazzling of artificial lights in comparison with sunshine.

Even if the exposure to the solar rays is not sufficient to actually destroy the bacteria, it may yet profoundly modify their character and bring about the most important changes in their subsequent behavior. Thus, while many bacteria can produce the most wonderful colors—yellow, orange, scarlet, crimson, indigo-blue, violet, etc.—it has been found, at any rate in the case of one of these pigment-producing microbes, that exposure to sunshine for a short time is able to rob it of this beautiful property, and the organism which, under ordinary circumstances, was wont to elaborate a splendid red pigment is, by being submitted to the sun's rays, so degraded as to produce afterward only a dirty or colorless material.

Much hygienic importance and interest attaches to some investigations in a somewhat similar direction made by Dr. Palermo, of Naples, and which have only been published within the last few weeks. The microbe selected for experiment was Koch's cholera bacillus. Now, these bacilli, which are almost universally accredited with the honor of producing Asiatic cholera in man, are also fatal to guinea-pigs in about eighteen hours. Dr. Palermo placed some of these cholera bacilli in the sunshine for various periods of time, and he found that while, when he protected them from the sun, they killed guinea-pigs in eighteen hours as usual, after they had been "sunned" for from three and a half to four and a half hours they were perfectly harmless, and the animals experienced no evil results whatever from being treated with them.

The cholera bacilli which refused to kill the guinea-pigs had not been destroyed, nor had their total number suffered any

diminution, by the action of the sunshine during this short time, but their inability to work mischief was directly due to the removal *during this exposure of their virulence or disease-producing powers.* More than this, the further important discovery was made that those guinea-pigs which had survived the above inoculation with these sunshine-exposed or insolated cholera bacilli, had acquired immunity toward this disease, or, in other words, were protected from contracting it afterward, much in the same way as vaccination with cow-pox protects the individual from an attack of small-pox. Thus when eight days later these particular guinea-pigs were inoculated with *virulent* cholera bacilli they were quite unaffected by doses which to ordinary guinea-pigs proved rapidly fatal. *Thus by exposure to sunshine these disease microbes were not only deprived of their sting, so to speak, but were converted into useful servants in protecting their former victims from the attacks of their still viciously disposed brethren.*

We are as yet only on the threshold of this most interesting branch of bacteriological research, but the results which have been already obtained open up the possibility of discoveries of vital importance in hygienic science.

We are logically led when reflecting upon this solar power of destroying bacteria to inquire as to when and where it comes into operation in Nature. It is obvious of course that this action can only go on upon the actual surface of the earth, and that a depth of even a very small fraction of an inch must be quite sufficient to place bacteria beyond the reach of this potent and lethal agency. On the other hand, in the case of water, with its great transparency to light, we might anticipate that this destructive power of the sun's rays would penetrate to very considerable depths.

Nearly two years ago I made a number of experiments on the action of sunshine on the spores of anthrax suspended in water, and I found that in this medium they were able in some cases to survive as much as one hundred hours and more of full sunshine, while in ordinary culture materials, like broth and jelly, they are generally killed by a few hours' exposure to the sun's rays. In order to ascertain the cause of this curious phenomenon, I am trying, by adding various ingredients to water, to find out what substances tend to accelerate the

action of the sun's rays. Already I have discovered that the addition of common salt greatly increases the destructive action of sunshine on anthrax spores suspended in water, while the addition of a similar proportion of sulphate of soda (Glauber's salt) has no effect whatever. These experiments are being continued, and I hope to be able shortly to throw some more light on this unexpected and interesting phenomenon. All the experiments to which I have so far referred have been made in the laboratory, and with bacteria in what may be described as a state of captivity. Before generalizing from such investigations we always endeavor if possible to test our results by some crucial experiments made, so to speak, in the open-air laboratory of Nature herself.

Already in the year 1886, in my reports to the Local Government Board on the bacterial condition of the water supplied to London, I showed that the number of micro-organisms in the waters of the Thames and Lea was often twenty times as great in the winter as during the summer months. Now, although I do not attribute this increase in the water microbes during the winter months by any means wholly to the great reduction in the amount of sunshine which in our foggy land unfortunately characterizes the winter of the year —for there are other important factors calculated also to bring about these seasonal variations in the number of river bacteria—yet there can be no doubt that the presence or absence of sunshine plays some part in producing these striking results.

In order to ascertain the effect of daylight on the bacteria in a running stream two young German enthusiasts lately carried out an interesting experiment on the river Isar above Munich. These investigators sat a whole night by the river bank, from six in the evening until six on the following morning, determining the number of microbes in the water at various intervals of time. The experiments were made toward the end of September, and they commenced their watch about sunset at a quarter past six in the evening. At this time 160 bacteria were found in about twenty drops of water ; but at three and four o'clock in the morning, when the water had therefore been for several hours in darkness, there were more than twice, and even three times, that number of germs pres-

ent, indicating that in the absence of their deadly foe, the sun, they had multiplied with great freedom—only, however, as was found when morning approached and day wore on, to be kept once more in subjection and reduced in number.

These experiments were made with water taken from the superficial layers only, but it is obviously of particular interest to ascertain whether this destruction of bacteria can take place also beneath the surface of the water, and, if so, to what depth the sun's rays can exercise this inhibitive power.

In the Starnberger See, near Munich, at a spot where the water was fairly clear although slightly disturbed by steamboat traffic, it was found that at about a depth of ten feet below the surface this destructive action on bacterial life entirely ceased. More exact experiments published a few weeks ago by Dr. Procacci, of Naples, in which cylindrical glass vessels were filled with water and exposed to the sun from above only, showed that the rays after passing through twenty inches of water had hardly any power to hurt the bacteria present, this slight depth having deprived them of nearly all their bactericidal capacity.

An original and extremely simple method of experimenting on this fascinating subject was devised and published nearly two years ago by Professor Buchner, of Munich. It is so pretty in its conception that I cannot desist from giving a slight sketch of a process which I think may be appropriately described as *photo-bacteriography*, if I may be allowed to coin a new word for the purpose.

It consists in evenly mixing in melted jelly the particular germs upon which it is desired to try the action of sunshine. The jelly is then poured into small glass dishes, in which it rapidly congeals, and the latter are then covered over with black paper ; on one side, however, some letters are cut out, leaving open spaces in the shape of the particular letters removed. When the dishes are exposed to the sunshine, it is of course obvious that the light can only gain access to the jelly and its bacterial contents through the apertures made by the cut-away letters, while the remainder of the jelly is protected and therefore in darkness. After such dishes have been exposed, say, for two, three, four hours, or any time it is thought necessary, they are transferred to a dark cupboard

and kept at such a temperature as will best permit of the growth and multiplication of the bacteria present in the jelly. If the exposure to the light, however, has proved injurious, then those bacteria which were in the illuminated portions of the jelly will either have been destroyed, and therefore prevented from giving rise to any growths at all, or their vitality will have been so much impaired that the growth in these parts will be much feebler than in those portions where the jelly remained in darkness. In this manner the letters cut out of the black paper covers will be found visibly to the naked eye delineated or marked out on the jelly by the absence of growth of any bacteria in these particular portions of the dish. Of course any combination of letters may be employed, and Buchner has in this way succeeded in causing the names " Cholera," " Typhoid," etc., to be inscribed on jelly surfaces by the contained cholera and typhoid germs exposed to sunshine in the manner just indicated.

I do not think, therefore, that I am guilty of any unjustifiable use of language or stretch of the imagination in designating this process as *photo-bacteriography*.

Of course numerous applications may be made of this elegant method, which has recently been much used by Marshall Ward for the investigation of some of the varied problems connected with the action of light on micro-organisms.

Thus modern scientific investigation is daily enlarging the horizon of our knowledge concerning the stupendous influence which the sun exerts over almost every detail in terrestrial affairs. The study of these minute living organisms, which have attracted so much attention during the past twenty years, has also served in this most surprising and unexpected manner to increase our admiration of the marvellous dominion which is thus wielded by the sun ; and even if we are not quite prepared to revert to the ancient religion of Khuenaten and of the Disk Worshippers of Egypt, we shall at any rate deeply respect the material intelligence and beauty of their doctrines, while we shall all endorse the poetic imagery of Plato, when he says that " Truth is the Body of God, and Light is His Shadow."—*Nineteenth Century for May*, 1894.

MORTALITY AND MORBILITY STATISTICS.

By HARRY KENT BELL, M.D.

ALABAMA.—Jerome Cochrane, M.D., State Health Officer, Montgomery.

Mobile, 31,076: T. S. Scales, M.D., Health Officer, reports for the month of May a mortality of 79, of which 34 were colored, and 27 were under five years of age. The annual death-rate per 1000 was 30.48.

Zymotic diseases caused 15 deaths, and consumption, 14.

ARKANSAS.—D. W. Holman, Secretary, Little Rock.

Hot Springs.—A report of the board of health on the condition of the water furnished the city by the water company created something of a sensation at the council meeting July 2d. The report was accompanied by a chemical analysis, which showed that the water was full of organic matter, and wholly unfit for use. President Hogaboom, of the water company, who was present, said it was impossible to remedy the matter, whereupon the council decided that the company would not be paid a cent for the water by the city until it was rendered wholesome. Some lively litigation is in prospect.

CALIFORNIA.—J. R. Laine, M.D., Secretary, Sacramento.

For the month of May the reports from 78 cities, towns, villages, and sanitary districts, aggregating a population of 772,023, show a mortality of 972—a death-rate of 15.12 per 1000 per annum.

There were 168 deaths from consumption, 76 from pneumonia, 31 from bronchitis, 9 from congestion of the lungs, 79 from diseases of the stomach and bowels, 19 from diphtheria and croup, 3 from scarlatina, 7 from whooping-cough, 15 from typhoid-fever, 3 from *la grippe*, and 2 from small-pox.

Reports of prevailing diseases from 46 localities, outside of the larger towns and cities, give 40 cases of pneumonia, 100 of bronchitis, 26 of pleurisy, 6 of congestion of the lungs, 171 of diarrhœa, 74 of dysentery, 24 of cholera morbus, 34 of cholera infantum, 12 of diphtheria and croup, 10 of scarlatina,

160 of measles, 38 of whooping-cough, 76 of *la grippe*, 19 of typhoid-fever, 202 of malarial-fevers, 10 of cerebro-spinal-fever, 21 of erysipelas, 84 of rheumatism, 76 of neuralgia, 67 of tonsilitis, 80 of pharyngitis, and 55 of small-pox.

CONNECTICUT.—Professor C. A. Lindsley, M.D., Secretary, New Haven.

The mortality report for May has been received from 166 towns in the State. There were 981 deaths reported in the State during the month. This was 119 less than in April, and 243 less than in May, 1893, and 109 less than the average number of deaths in May for the five years preceding the present. The death-rate was 14 5 for the large towns; for the small towns 15.5, and 14.8 for the whole State. The deaths from zymotic diseases were 109, being 11.1 per cent of the total mortality. There were 117 deaths from consumption.

DELAWARE.—E. B. Frazer, Secretary, Wilmington.

DISTRICT OF COLUMBIA, 250,000: C. M. Hammett, M.D., Health Officer, reports for the five weeks ending June 30th a mortality of 764, of which number 362 were of colored people, and 399 were under five years of age. The annual death-rate was 27.8 per 1000. There were 255 deaths from zymotic diseases, and 60 from consumption.

FLORIDA.—Joseph Y. Porter, M.D., Secretary, Jacksonville.

The summary, as published in *Florida Health Notes* for the month of April, is as follows:

Number of counties reporting, 45; number of cities reporting, 3; total population of said counties and cities, 391,422; number of births reported, 466; number of marriages reported, 421; number of deaths reported, 321; birth-rate per 1000 per annum, 13.40; death-rate per 1000 per annum, 9.83; average age of decedents, 30.22; number of deaths under five years of age, 107. Deaths from zymotic diseases numbered 53, and from consumption, 42.

ILLINOIS.—J. W. Scott, Secretary, Springfield.

INDIANA.—C. N. Metcalf, M.D., Secretary, Indianapolis.

IOWA.—J. F. Kennedy, M.D., Secretary, Des Moines.

Dubuque, 40,000. Dr. Wieland, City Health Physician, has represented to Superintendent Kimball of the water works, that a chemical analysis has shown the city's water supply to be impure and unfit for drinking purposes, and has asked him to sink an artesian well to provide drinking water.

Superintendent Kimball refuses. He says the company's charter provides that when the water supply from the reservoir fails the company shall draw a supply from the river. It says nothing about sinking an artesian well, which would cost $3000 or $4000, and he has no authority from the company to sink it.

KANSAS.—M. O'Brien, M.D., Secretary, Topeka.

KENTUCKY.—J. N. McCormack, M.D., Secretary, Bowling Green.

LOUISIANA.—W. R. Harnan, M.D., Secretary, New Orleans.

At a meeting of the Board, July 17th, Dr. Oliphant presiding, reports were read from the sanitary officers at Central American ports, and they were all of a satisfactory nature. Dr. Finney submitted his report showing the number of deaths that occurred during the last month and giving other important information. He reported as follows about the New Orleans Sewerage Company :

" The work of the sewerage company is temporarily suspended, as they intend giving up the excavating from the surface (which was merely experimental) and propose to make their main sewers by tunnelling, which they say will greatly accelerate their work. President Holt informed me that they expected to have the principal sections of the city sewered in from eighteen to twenty-four months. There is at present one hundred and ten feet of the sewer constructed on St. Ann Street."

The following resolution was adopted :

" Recognizing forcibly the deleterious effects and unsani-

tary influences of decaying animal, vegetable, and wooden matter, and more especially the unwholesome and contaminating effects of decaying woods in houses, ships, and in roads or streets, especially when exposed to the weather:

"*Resolved*, That in the judgment of this board the streets and back premises of all places should not only be kept scrupulously clean, pure and free from the matters above mentioned, but that decaying woods, whether in vessels, house, and even the houses themselves in this condition, should be condemned at an early date and required to be removed as nuisances and prolific causes of diseases and fruitful sources of the more ready contagious and consequence of disease, and in this category, too, we class all wooden roads or causeways put down on the streets, such as wooden covers over canals, the wooden road over Calliope Street and others, and all those on city railroad tracks, and we strenuously counsel against them, and would respectfully urge upon the City Council, by petition if necessary, to be on the alert in this matter and remove the already existing measures and causes of sickness of this kind, and to prohibit hereafter by legal enactment the building of any more roads, whether for streets or car-tracks, with wooden material."

New Orleans, 254,000—184,500 white, 69,500 colored. There were reported for five weeks ending June 23d, 695 deaths, of which number 227 were among the colored people, and 275 of children under five years of age. There were 150 deaths due to zymotic diseases, and 83 to consumption. The annual death-rate was 28.55 per 1000.

MAINE.—A. G. Young, M.D., Secretary, Augusta.

MARYLAND.—James A. Steuart, M.D., Secretary, Baltimore.

The State Board of Health has issued an address to the people of Maryland urging the importance of vaccination as a protection against small-pox. "A general vaccination," says the State Board, "affords complete protection from small-pox for several years, often for life, and partial protection always through life. It seems like doubting the intelligence of the people of Maryland to present to them proofs of the protective power of vaccination. The long immunity

from this disease which we have enjoyed has begotten a disregard of this unrivalled means of safety, and possibly, in some minds, ignorance of its value."

Baltimore, 455,427: James F. McShane, M.D., Commissioner, reports for May that the total deaths were 703, a decrease of 63, compared with the corresponding month of May, 1893. Of these 527 were whites and 176 colored; a death-rate of 16.47 per 1000 for the former and 29.74 per 1000 for the latter. The death-rate per 1000 for the whole population was 18.54; 39 died from infectious diseases, 93 from consumption, 53 from pneumonia, 19 from bronchitis, 6 from influenza, and 19 from Bright's disease; 237 or 33.71 per cent of the total deaths were in children under five years of age.

During the month 203 cases of infectious diseases were reported, an increase of 53 compared with the preceding month.

MASSACHUSETTS.—S. W. Abbott, M.D., Secretary, Boston.

A Decision on Sanitary Defects.—A landlord is not legally bound to inform his tenants at will of sanitary defects in the drain of the house. Neither is he liable to the tenant at will in a suit for damages for negligence in not acquainting such tenant of defects in the drain which arose during the course of the tenancy, even where the condition of the drain caused one of the occupants to take typhoid-fever and die. These propositions were laid down by the full bench of the Supreme Court June 20th, 1894, in the case of Mrs. Julia Bertie, administratrix of the estate of John Bertie against Hiram P. Flagg. The plaintiff alleged that the defendant, who was the owner of the house 76 Poplar Street, and her intestate was a tenant at will of the premises; that in the course of making other repairs the defendant discovered that the drain was in a bad condition and needed certain repairs; that he neglected to repair it, covered it up, and did not inform her intestate, and that "by reason of said negligence . . . the plaintiff's intestate, being ignorant of the condition of said drain, contracted typhoid-fever" from it. The court says that "this defect was an ordinary defect in the drain in use on the premises, and the danger was the ordinary danger from that source. It was discovered in the course of a tenancy at will. We are of the opinion that the landlord was under no obligation to

repair it, and if we are to take it that the plaintiff was ignorant of the defect as well as of the failure to repair it, notwithstanding the allegation that the defendant refused to make the necessary repairs, we are of the opinion that he was under no obligation to disclose it."

Boston, 487,397 : S. H. Durgin, M.D., Chairman.

There were 868 deaths reported in May, of which number 266 were under five years of age. The annual death-rate per 1000 was 21.37. There were 125 deaths from zymotic diseases, and 126 from consumption.

MICHIGAN.—Henry B. Baker, M.D., Secretary, Lansing.

For the month of June, 1894, compared with the preceding month, the prevailing direction of the wind was southwest (instead of northwest), the velocity was 2 miles per hour less, the temperature was 14.84° higher, the rainfall was 4.70 inches less, the absolute humidity was more, the relative humidity was less, the day and night ozone were less, and the depth of water in the well at Lansing was 3 inches more.

For the month of June, 1894, compared with the preceding month, diarrhœa increased, and pneumonia, influenza, measles, tonsilitis, erysipelas, and bronchitis decreased in area of prevalence.

Compared with the average for corresponding months in the eight years 1886–93, the prevailing direction of the wind was the same (southwest), the velocity was slightly greater, the temperature was 2.98° higher, the rainfall at Lansing was 1.64 inches less, the absolute and relative humidity were more, the day and night ozone were less, and the depth of water in the well at Lansing was 4 inches more.

Compared with the average for corresponding months in the eight years 1886–93, scarlet-fever and whooping-cough were more prevalent, and erysipelas, intermittent-fever, remittent-fever, influenza, consumption, and bronchitis were less prevalent in June, 1894.

Including reports by regular observers and others, consumption was reported present in Michigan in the month of June, 1894, at two hundred and nineteen places ; scarlet-fever at eighty-nine places ; measles at eighty-one places ; diphtheria at forty-eight places ; typhoid-fever at thirty places ; small-

pox at thirteen places, and one case of suspected typhus-fever at Gobleville.

Reports from all sources show measles reported at forty-nine places less; diphtheria at twenty-four places less; scarlet-fever at nineteen places less; small-pox at six places more, and consumption at one place less than in the preceding month; typhoid-fever was reported at the same number of places as in the month of May.

Small-pox.—There have been twenty-six outbreaks since January 1st, 1894. The average to each outbreak has been only 2.8 cases and 0.6 of one death. In six of the ten outbreaks which are now over the infection was restricted to the one house in which it first occurred.

The 12 deaths out of 30 cases in the ten outbreaks which are closed are a powerful argument for vaccination and revaccination, because they show that among persons unprotected by vaccination small-pox is still the same deadly and dreadful disease that it has been, the mortality thus far having been 40 per cent.

MINNESOTA.—C. N. Hewitt, M.D., Secretary, Red Wing.

St. Paul, 155,000: H. F. Hoyt, Commissioner. The mortality for May was 105, of which 34 were of children under five years of age. The annual death-rate was 8.12 per 1000. Zymotic diseases caused 10 deaths, and consumption, 7.

MISSISSIPPI.—Wirt Johnson, M.D., Secretary, Jackson.

MISSOURI.—R. C. Atkinson, M.D., Secretary, St. Louis.

St. Louis, 540,800: George Homan, M.D., Commissioner.

The Condemned Wells:

EDITOR THE SANITARIAN: In your issue for July, page 70, appears a statement which without explanation may be misunderstood by your readers. I refer to the paragraph in which comment is made on condemned wells in this city. In every case of the kind mentioned the premises are supplied with hydrant water for all domestic purposes; but, under cautionary restrictions, the well water may be used for sprinkling, watering stock, washing wagons, yards, etc.

The owner is given to understand that with failure on his

part to maintain the warning sign the abatement of the well will follow.

GEORGE HOMAN,
Health Commissioner.

NEBRASKA.—F. D. Haldeman, M.D., Secretary, Ord.

NEW HAMPSHIRE.—Irving A. Watson, M.D., Secretary, Concord.

NEW JERSEY.— , M.D., Secretary, Trenton.

Hudson County, 310,022: W. W. Varick, M.D., President. The mortality for May is reported to have been 425, of which 163 were under five years of age. The annual death-rate was 19.5 per 1000. From zymotic diseases there were 66 deaths, and from consumption, 34.

NEW YORK.—J. S. Barnes, M.D., Secretary, Albany.

There were 9286 deaths reported during May, which represents a daily average of 300 deaths, against 320 in April, and 337 during the first four months of the year. There were 1295 deaths from zymotic diseases, which is less than it has previously been, although the zymotic death-rate has been generally low during the past winter and spring months. There is a slight increase in the mortality from diarrhœal diseases, and the 585 deaths from diphtheria is a somewhat larger number than have occurred since January; of these, 500 were reported from the maritime district, and there is no special prevalence of the disease throughout the State. Smallpox caused 37 deaths, of which 26 were reported from New York and Brooklyn, 7 in towns in their immediate vicinity, 3 in the Albany penitentiary, and 1 in Rochester. Outside of New York and Brooklyn, where it is diminishing in prevalence, there are now or have recently been in Edgewater, 5 cases; Croton-on-the-Hudson, 2; Stony Point, 1; Onondaga and Salina, near Syracuse, each 2 reported; Perrinton, 3, and Seneca Falls, 9 cases in one household; it is not known to exist elsewhere in the State. Other zymotic diseases all caused fewer deaths than have heretofore been reported. Consumption shows little variation from the ordinary rate of about 1100 deaths monthly. Acute respiratory diseases have very materially diminished, having caused about 400 fewer deaths than in the preceding month. The weather for the

month has been characterized by excessive rainfall, the total excess amounting to 2.23 inches. The prevalent wind has been southwest and the average temperature that of the normal.

New York, 1,925,562 : Total deaths, 3388—1329 under five years. Death-rate, 20.71. Zymotic diseases per 1000 deaths from all causes, 165.75. Deaths from consumption, 388.

A comparison of the mortality rates for the last three years, just made by Dr. Roger S. Tracey, shows that there were in the first half of 1894 21,555 deaths, as compared with 23,734 deaths during the first half of last year.

The improved condition of the city is best shown by the marked decrease of the death-rate among children under five years of age in the tenement-house districts. In 1891 the death-rate was 86.67 to every 1000, while in 1893 the rate had decreased to 76.74. In 1893 there were 13,823 deaths among the children, while in 1891 there were 13,950 deaths, although the number of children under five years of age in the tenement houses had increased from 160,708 to 180,339.

The statistics show that, though the entire tenement-house population advanced from 1,225,421 in 1891 to 1,332,773 in 1893, the death-rate fell from 23.77 to 22.75.

This death-rate ignores 3800 deaths in hospitals of people who could not be traced. Referring all such deaths back to the tenement-house districts, the death-rate obtained for 1891 is 25.56, and for 1893 25.60.

For the first half of 1893 the general death-rate was 25.10 per 1000 of the population, and for the same term of this year 22.02. The births reported in the same year footed up 23,451 ; in 1894, 28,196, which is 24.80 per 1000 of population in 1893, and 28.80 in 1894. Marriages fell off from 8196 in the first half of last year to 7811 in the first half of this year.

The general death-rates for the years 1891 and 1893 were 25.98 and 23.52 respectively.

One out of every four persons who died in New York in 1893 died in a hospital, jail, or institution of some sort. The number so recorded was 10,637. Out of this number about 700 had come from out of town and died here. Only about 1000 could actually be traced back to the tenement houses. There were 3801 that were unaccounted for.

The Summer Corps.—Fifty physicians appointed on the summer corps of the Board of Health for work in the tenement-house district until September, reported to Dr. Moreau Morris, at Sanitary Headquarters, July 7th, were sworn in and began work.

Fifty districts are laid out in the crowded parts of the city, and the physicians are instructed to correct as far as possible any unsanitary conditions they may discover. They are to visit the tenement houses especially, seek out the sick, and if they are found to be without medical attendance, prescribe for them. Each case is to be treated continuously so long as may be necessary, and the same as if it were a private patient.

These doctors are paid $100 a month apiece by the city, and there are four young women among them. They are expected to co-operate, so far as possible, with *The Evening World's* corps of doctors, and not interfere with the work of private physicians. The doctors are supplied with tickets for the hospital boats of St. John's Guild, which they will distribute among mothers having sick children under six years old.

Annual report for 1892 shows that with an estimated population of 1,827,396, there were 44,329 deaths as against 43,659 deaths in 1891, with an estimated population of 1,765,645, showing a death-rate of 24.26 per 1000 in 1892 as against 24.73 per 1000 in 1891.

While the rate of mortality for 1892 was not only lower than that of 1891, but below the average for the years between 1880 and 1889, it cannot be gainsaid that the great gain was in the latter part of the year (after August 6th), during which time there was a great falling off in the death-rate. During the first half of the year, as compared with 1891, there was an increase of 297 deaths.

The five weeks following were weeks of extraordinary high mortality; therefore, at the end of the thirty-first week of the year (August 6th) there were 1754 more deaths in 1892 than in the same period of the preceding year. Of this excess (297) during the first half of the year, 76 deaths were chargeable to small-pox and typhus-fever, which together caused only 3 deaths in 1891, and accounts for about 25 per cent of the increase for 1892. That the great increase during the

next five weeks (July 2d to August 6th) was chargeable to the intense heat of the month of July is plainly shown by a comparison of the temperatures for July and the first week in August.

Of the causes of death:

Pneumonia caused 5841—13.18 per cent of the total.

The age periods when the greatest number of deaths, 5313, or 90.96 per cent of the whole number, occurred were under five years and above twenty-five years of age. Of 382,551 deaths from all causes occurring during the past ten years, 40,223, or 10.51 per cent, were chargeable to pneumonia. The percentage of total mortality has increased from 9.16 per cent in 1882 to 13.18 in 1892.

Phthisis caused 5033—11.34 per cent of total.

The age period when the greatest number of deaths, 2635, or 52.36 per cent of all of the deaths, occurred was between twenty-five and forty-five years of age. Of 382,551 deaths from all causes during the past ten years, 52,766, or 13.79 per cent, were chargeable to phthisis. The percentage of mortality has decreased from 13.84 in 1882 to 11.35 in 1892.

Typhus-fever, which had become to be almost an unknown disease in the city of New York since 1886, was introduced by immigrants from the steamship *Massilia*, which ship arrived at this port January 30th. On February 11th four postal cards were received at the office of the Division of Contagious Diseases, informing the department that four cases of typhoid-fever had developed at No. 42 East Twelfth Street. It was so unusual a circumstance to have four cases of typhoid reported from one house that Dr. Edson made a personal visitation, and upon examination found, instead of four cases of typhoid, there were fifteen well-developed cases of that most dreaded of all contagious diseases, *typhus-fever*. The patients were immediately removed to the Reception Hospital *en route* for Riverside Hospital, and an investigation set on foot to determine the origin and cause of the disease. Before eight o'clock the same evening it was found that the steamship *Massilia* had arrived at this port on January 30th with 248 Russian Hebrews and upward of 400 Italians. The Hebrews, through the agency of the Hirsch Fund, were under the immediate charge of the United Hebrew Charities Association,

and, with the exception of 17 persons, were located in eight boarding-houses in this city. A careful inspection resulted in finding 52 additional cases. Pavilions and hospital tents being promptly provided, on March 6th all those who had not developed typhus, but who had been exposed to the contagion, were removed to North Brother Island and there isolated until twenty-one days after the last case had developed among them. From among the 248 Hebrew passengers by the *Massilia* 138 cases of fever developed. The first case among residents occurred on February 19, and up to and including the last case, November 30th, there were 103 cases, making the total number 241, with 45 deaths.

Small-pox.—The first case reported was January 18th. From this time cases continued to be reported from time to time throughout the year, the result being the discovery of 378 in all, with 81 deaths. Whenever a case was reported, it was investigated at once, and if the diagnosis was confirmed, it was immediately removed to the hospital, the premises fumigated, and each person vaccinated and visited daily for twenty-one days. Total vaccinations and revaccinations, 139,805.

Spurious vaccination with special reference to the so-called raspberry-fungus, or non-protective hemorrhagic vaccination, appears to have been made the subject of particular investigation by the Chief Inspector, Dr. Charles F. Roberts (now Sanitary Superintendent), who gives the only clear description of this peculiar development that has fallen under our observation, as follows :

" All the literature to which I have had access clearly refers to spurious vaccination resulting from inoculation made directly from one subject to the other—that is, from arm to arm, and not such as in the product of the kine-pock reproduced from bovine sources. It is singular that such a product should be developed in the human subject from virus taken from a healthy animal in which was reproduced a typical vaccina with well-developed vesicles filled with lymph, and to all appearances possessing the same activity as that with which the animal was vaccinated.

" Whatever the primary cause that changes the nature of the vesicle and its contents from a lymph to a blood product

may be, the ultimate result is a pathological condition. Two theories accounting for this change have been presented :

" First. That the change is owing to the absence from the system of the person vaccinated of that element, condition, or substance, or both, which is essential to a proper development of vaccine germs, or what is commonly called non-susceptibility.

" Second. That the germs of the virus used have non-sufficient vitality, so that after a certain period of activity, growth ceases.

" That the first of these is untenable may be readily shown. If the wall of the hemorrhagic vesicle be torn or scratched so that the blood can escape, and fresh active bovine virus be applied to the wounded surface, a perfect lymph vesicle, areola, scab and cicatrix may be developed.

" The second hypothesis is quite well borne out by the phenomena which present themselves while the vesicles are developing. The vaccination apparently runs the same course as a perfect one would do up to the time that the vesicle should be filled with lymph—that is, for three or four days after the inoculation with bovine virus ; there is an increasing pink blush under the point of scarified surface, which surface becomes slightly elevated above the surrounding skin, and which, if each point of vaccination could be isolated, would mark the papular stage of the development.

" Between the fifth and eighth day, when the epidermis has been elevated into vesicles with a cellular structure, the change characteristic of this variety of vaccination occurs, blood escapes from the capillaries in the papillary layer of the skin, which gradually fills the vesicles to distention.

" These vesicles, by the coalescing of their sides, usually develop in a mass with a central depression or umbilication, which is not as marked as in a perfect vaccination. The after course of these hemorrhagic bullæ is that of an ordinary blood-blister produced by violence. The fluid portion is absorbed or evaporated, the solid dries, and falls off without making any permanent change in the dermal layers. That they are non-protective against variola is shown :

" First. By the complete absence of the constitutional disturbance indurated areola, and the pitted cicatrix, resulting from lymph vesicles.

"Second. That revaccination performed after the development of this variety of spurious vaccination is successful.

"Third. When revaccination under this condition has been refused, the person has developed small-pox on being exposed to that grave malady.

"The anatomical appearances presented for three or four days at the surface of inoculation are those attending an ordinary vaccination, then they differ materially; the change in appearance may be delayed to the seventh or eighth day or even longer. Usually on the third or fourth day a well-marked rose-blush tint is present at the scarified spot, which is slightly elevated above the surface of the surrounding tissue.

"The vesicle now begins to form. Instead, however, of filling with lymph as it usually does, an exudation of blood takes place, which elevates the epithelial layer of the skin and distends it much more than a perfect vaccine vesicle does.

"After a period varying from ten days to two or three weeks, during which time the vesicle shrivels and dries up, it falls off without in any way destroying or disfiguring the skin on which it was developed, leaving only a slight reddish-brown discoloration, which soon fades away.

"There is absolute freedom from constitutional disturbance, and, beyond a certain degree of itching and sometimes slight redness around the vesicle, due to the irritation caused by scratching, no inconvenience whatsoever. A true areola never accompanies a non-protective hemorrhagic vaccination.

"Sometimes a perfect vaccinia lymph vesicle is converted into the hemorrhagic form, but the constitutional disturbances, the painfully swollen arm, and final ulceration accompanying it, will serve to distinguish the true from the spurious vaccination.

"*Treatment.*—If left to itself, the non-protective hemorrhagic vesicle will terminate in the way already described. The application of tincture of iodine will hasten dessication and desquamation."

Cholera.—The first case appeared in the city of New York September 5th, and died September 7th. Other cases developed in succession until September 29th, *ten* cases in all, in different sections of the city—"*no secondary case occurring in*

any one locality."—The italics are the editor's, for the purpose of emphasizing effective sanitary work. The occurrence of cholera here in 1892, and the efficient manner in which it was dealt with, was so fully reported in these pages at the time that it is unnecessary to do more than to recall the reader's attention to one of the best examples of efficient sanitary work on record—an example eminently worthy of being held up as an object lesson for the encouragement of all sanitary officers. Indeed the report, as a whole, though lacking freshness on account of its tardy appearance, is eminently creditable to the Health Department in all its details.

Brooklyn, 1,003,781 : Total deaths, 1610—622 under five years. Death-rate, 18.40. Zymotic diseases per 1000 deaths from all causes, 158.40. Deaths from consumption, 179.

Newtown Creek and Gowanus Canal are bubbling foul gases. Excepting these, the prevailing odor throughout the city is stable manure.

Diphtheria, which has averaged nearly eight hundred deaths annually for the last ten years, is reported to be on the increase, though unseasonably : 1100 cases during the four months ending June 30th.

Measles is also unusually prevalent.

A disinfecting plant is in process of erection.

Ordered, that on and after July 12th all persons peddling fish must keep their fish under cover, preferably in a box lined with zinc with a hinged cover. Also, each peddler must provide a tightly covered pail into which he shall put all offal and refuse removed from the fish when sold.

Syracuse, 91,944 : Total deaths, 113—28 under five years. Death-rate, 15.00. Zymotic diseases per 1000 deaths from all causes, 53.25. From consumption, 20.

The Smead system of heating and ventilating, to which THE SANITARIAN has several times heretofore had occasion to refer, as a frequent subject of discussion, appears to have awakened a healthy *scenti*ment in Syracuse. Dr. Totman, the Health Officer, in calling the attention of the Board of Health to it, is reported to have said :

"I am frank to state, and in my own capacity as a physician I declare that, in every aspect I have seen it, this system is unsanitary and unsafe in any community. I am led to this

decision by over a year's observation of the system. The Board of Health has been trying to render the air pure and healthful and to keep out of the atmosphere all deleterious substances, rather than have a foul cesspool under one of our public schools. Montgomery School will soon be a death-trap. If the excreta is allowed to remain it will soon leach into the soil and into the wells, if there are any about the schools."

"The Board of Education are going to some expense in this system," said Commissioner Hanchett, "and they shouldn't allow anything like it without an investigation. It is an expensive method."

"Judging from other cities Syracuse will enter into a bitter contest against this system," continued Dr. Totman. "I know that the members of the Board of Health are gentlemen, and will not tolerate the system when they have discovered that it is unsatisfactory. But they are thoroughly imbued with the idea that this is the best system ever patented."

"I concur with the Health Officer in every respect," said Dr. Smith. "I have visited some of the schools and found that the conditions that he described existed within six weeks after the use of the Smead system was begun. There is no question but what the water will soak through and permeate the ground and make it a foul and dangerous pest-hole."

A committee from the Heating, Ventilating, and Sanitary Association of Syracuse then came before the Board with a statement of what they found in an investigation of Montgomery and other schools of the city. The statement is as follows:

"*Montgomery School.*—The vaults for the so-called dry-closet system were filled with a putrid mass of night soil and liquid 20 inches deep. Over each of these vaults (two in number) are located the two class-rooms of the primary department, each containing 48 sittings and occupied by about 80 scholars. Each of these two rooms are provided with two ventilating exits in the shape of face plates located in the floor. These exits which open into foul air shafts or chambers to ditch are connected to and open into the said vaults. In each case one of these face-plate exits opens into the foul-air chamber directly over the putrid mass of liquid night soil

above referred to. All the shafts for drawing foul air from the class-rooms of the school open into these two vaults.

"We found upon examination that in the rooms on the second floor (over the vaults) the foul-air ventilating exits were operating contrary to the intention, and that they were throwing foul air into the rooms, instead of exhausting it. Some of the air being thrown into the rooms had passed through the vaults hereinbefore mentioned. According to statements made by persons in the building, these conditions have existed more or less during the past season. The teacher stated that they have been obliged to open the windows to obtain pure air.

"We were informed by the janitor that he had attempted to burn out the excreta deposits with the aid of oil. He stated that he had used 30 gallons of oil in one vault without success, and had failed to consume the matter in the other vaults, using more or less oil."

Several other schools, where the system was in use, were found to be in similar condition.

"*In General.*—In the boys' department in each school visited, the urinals are constructed without any facility for flushing with water. The directions posted in each school especially orders that they shall not be flushed. These urinals were found in unclean conditions."

Dr. Totman said the Board of Education was planning to build new schools without any regard to sewerage and water supply.

June 21st the Board of Health adopted a resolution condemning *in toto* the dry-closet system in school buildings, directing that no more be put in and that those that are now in use be abolished as soon as practicable. But there is a disposition among some of the School Commissioners to question the judgment of the Board of Health, in spite of the defects which have been demonstrated to exist in the dry-closet system.

Albany, 98,000: Total deaths, 194—32 under five years. Death-rate, 23.60. Zymotic diseases per 1000 deaths from all causes, 150.00. From consumption, 36.

Buffalo, 300,000: Total deaths, 430—168 under five years. Death-rate, 17.20. Zymotic diseases per 1000 deaths from all causes, 160.45. From consumption, 50.

Rochester, 150,000: Total deaths, 179—55 under five years. Death-rate, 14.25. Zymotic diseases per 1000 deaths from all causes, 77.80. From consumption, 19.

NORTH CAROLINA.—Richard H. Lewis, M.D., Secretary, Raleigh.

From the *Bulletin* of the State Board of Health we find that during May there were 209 deaths in 29 towns, aggregating 146,154 population; 110 were of colored people, and 86 were of children under five years of age.

The annual death-rates were 13.7 per 1000 for the white population, 22.2 for the colored population, and 17.2 for the total. There were 41 deaths from consumption, 4 from typhoid-fever, 7 from pneumonia, and 49 from diarrhœal diseases.

Asheville, 12,000: Total deaths, 17. Annual death-rate, 17.0 per 1000.

Charlotte, 14,000: Total deaths, 17. Annual death-rate, 14.6 per 1000.

Raleigh, 15,000: Total deaths, 33. Annual death-rate, 26.4 per 1000.

Wilmington, 22,000: Total deaths, 41. Annual death-rate, 22.4 per 1000.

NORTH DAKOTA.—F. H. DeVaux, M.D., Superintendent, Valley City.

OHIO.—C. O. Probst, M.D., Secretary, Columbus.

OKLAHOMA TERRITORY.—J. O. Overton, M.D., Secretary, Kingfisher.

PENNSYLVANIA.—Benjamin Lee, M.D., Secretary, Phila delphia. The State Board of Health at its meeting, held in Lancaster, July 11th, adopted the following resolutions:

"*Resolved*, That it is the sense of the State Board of Health of Pennsylvania that the time has come when the State should provide hospital accommodations for persons suffering from pulmonary tuberculosis in the case of those who cannot be properly cared for in their own homes, and who through carelessness might be dangerous to the community at large. It

is believed that the establishment of such hospitals might be of great value in educating the people.

"*Resolved*, That it is the sense of the State Board of Health of Pennsylvania that all inmates of prisons, reformatories, almshouses, hospitals, schools, and other public institutions be vaccinated immediately on admission."

Philadelphia, 1,139,457: M. Veale, Health Officer, reports: In the two weeks ending June 30th there were 1134 deaths, of which number 551 were under five years of age. Annual death-rate, 25.9 per 1000. Deaths from consumption numbered 90, and from zymotic diseases 304, of which 190 were due to cholera infantum.

The Water Supply.—"It would be difficult," said Attorney Ezekiel Hunn, Jr., of the Anti-Boulevard Association, July 11th, "to imagine a city, claiming to be provided with the rudimentary wants of a civilized community, supplied with a worse quality of water than that which the residents in nearly all parts of Philadelphia just now are obliged to use.

"Inadequate as to supply, and inferior and unsatisfactory as to quality, as the Schuylkill water is at all times, it is just now especially scarce in some and unusually unclean and unfit for use in all sections of the city.

"Complaints on this score are to be heard on all sides. Besides being unsightly and unpalatable the water supply is unfit for the most ordinary household purposes of washing, cooking, etc.

"But there is another consideration of even greater importance. The relationship which drinking-water bears to the health of any community is well known.

"Impure water is one of the most fertile sources of disease, especially of such malignant and wasting fevers as typhoid, of which there have been a great many cases of late. If allowed to stand for a few hours after it has been drawn a most unpleasant odor is found to arise from the water with which the city is now supplied, indicating the presence of disease-breeding germs. Yet this is the chief and commonest beverage of the majority of our people.

"It has been said that the habit of wine-drinking became general in parts of Europe chiefly because of the lack of pure water. The discolored and tainted water supply of this city

is such as to cause many to purchase other beverages, one of the chiefest and commonest of those thus sold being beer. This relation of the quality of our city's water to the temperance question is one not to be ignored.

"In the interest of the primary needs of Philadelphia let us have a better water supply.

"After Mayor Stuart has vetoed the Boulevard ordinance, which, acting in the best interests of Philadelphia, as he has promised, we confidently believe his Honor will do, let us keep up the agitation for a new water supply, and continue agitating until Councils, who have stultified themselves by their action in reference to the extravagant Boulevard ordinance, grant our demand and give us one of the first needs of any civilized community—pure water."

Pittsburg, 264,000: J. Guy McCandless, M.D., Registrar, reports: During the four weeks ending June 23d there were 393 deaths, of which 198 were under five years of age. Annual death-rate, 18.72 per 1000. Zymotic diseases caused 97 deaths, and consumption, 31.

Bethlehem Board of Health and Bethlehem Town Council are at odds. The Board of Health complains of its treatment at the hands of Town Council. The members say that it has received no appropriation from Council, and when its bills are presented to Council they are referred back to the Board for approval. When they are again submitted the approval of the Finance Committee or some other committee is necessary before the bills are paid. This red-tape method delays payment of bills a month in some cases. The services of the Health Officer have been dispensed with pending the action of Council on the bill for services already rendered. Meanwhile nuisances are accumulating.

Lancaster, July 17. — Health Commissioner D. Frank Kline, M.D., has brought suit against Dr. J. Aug. Ehler, one of the leading physicians of the city, for violating the regulations of the Board of Health by failing to report a typhoid-fever case until after the victim died. The penalty is a fine of not less than $25 nor more than $100. Dr. Ehler intends contesting the case. The Board of Health finds great difficulty in enforcing its regulations, quite a number of physicians persistently ignoring them whenever possible.

RHODE ISLAND.—Gardner T. Swarts, Secretary, Providence. The mortality for April was 575 in an aggregate population of 345,506. The annual death-rate was 16.44 per 1000. There were 76 deaths due to zymotic diseases, and 50 to consumption.

SOUTH CAROLINA.—H. D. Frazer, M.D., Secretary, Charleston.

SOUTH DAKOTA.—C. B. Alford, M.D., President, Huron.

TENNESSEE.—J. Berrien Lindsley, M.D., Secretary, Nashville.

The principal diseases, named in the order of their greater prevalence, in the State for the month of May, were dysentery, malarial-fever, consumption, diarrhœa, lung diseases, acute, typhoid-fever, whooping-cough, mumps, measles, scarlet-fever, chicken-pox, diphtheria, and rheumatism.

Chattanooga, 40,000 : Total deaths, 47—colored, 32. Annual death-rates per 1000, white, 6.66 ; colored, 29.53 : total, 14.10.

Knoxville, 40,385 : Total deaths, 61—colored, 27. Annual death-rates per 1000, white, 13.04 ; colored, 35.55 : total, 18.12.

Memphis, 57,951 : Total deaths, 126—colored, 68. Annual death-rates per 1000, white, 21.49 ; colored, 31.90 : total, 26.09.

Nashville, 87,754 : Total deaths, 140—colored, 71. Annual death-rates per 1000, white, 15.16 ; colored, 25.69 : total, 19.14.

WASHINGTON.—G. S. Armstrong, M.D., Secretary, Olympia.

WEST VIRGINIA.—N. D. Baker, Secretary, Martinsburg.

WISCONSIN.—U. O. B. Wingate, M.D., Milwaukee.

Small-pox.—To July 10th, since January 28th, 1894, smallpox has appeared in 28 different localities in this State, there having been reported, thus far, to this board 82 cases with

29 deaths. As many of these cases occur in that class of individuals who are liable to come under the custody of sheriffs and police departments, it is of the utmost importance, at the present time, to carefully watch every prisoner in regard to his physical condition. The State Board of Health, therefore, earnestly recommends that all prisoners under the care of sheriffs or police authorities be carefully watched, *and before being discharged from custody, be examined by the health officer of the locality, if he be a physician; if not, by other competent medical authority.* It is the duty of health officers to attend to all such cases when called upon to do so by the officers in charge of all police stations, jails, or prisons. By a careful supervision, as herein recommended, the State Board of Health believes that a great deal can be done to aid the health authorities in the State in stamping out this disease.

Vaccination Required.—July 10th, the following rule was adopted, to be of general application throughout the State:

SECTION 1. No child shall be allowed to be enrolled as a pupil in any public, private, or parochial school without first presenting to the principal or teacher of the school in which he applies for enrolment or attendance the certificate of a reputable physician that he has been successfully vaccinated, or in lieu of such certificate of successful vaccination, a certificate from a reputable physician that such child has been vaccinated at least twice within a period of three months next preceding the date of such application; such latter certificate, however, shall be void after the expiration of one year from its date.

SEC. 2. No parent or guardian of any child shall allow or permit such child to attend any public, private, or parochial school in this State, and no principal or teacher of any such school shall allow a child to be enrolled as a pupil or attend such school as such without the evidence of vaccination herein required, and it is hereby made the duty of the proper school authorities in their respective localities to enforce the foregoing rule.

RAILWAY ACCIDENTS.—The Interstate Commerce Commission reports the number of railway employés killed during the year 1893 was 2727, being greater by 173 than those killed

during the previous year. The number of employés injured was 31,729, being greater by 3462 than the number injured the previous year. The number of passengers killed during the year was 299, being less by 77 than the number killed the previous year, and the number injured was 3229, being 2 in excess of the number injured the previous year. Of the total number of deaths to employés on account of railway accidents, 433 were due to coupling and uncoupling cars, 644 to falling from trains and engines, 73 to overhead obstructions, 247 to collisions, and 153 to derailments, the remainder being due to causes not so clearly defined. An assignment of casualties to the opportunity offered for accidents shows 1 employé to have been killed for every 320 men employed, and 1 to have been injured for every 28 men employed. The most dangerous service is that of trainmen, and for these the statistics show 1 employé to have been killed for every 115 trainmen, and 1 employé to have been injured for every 10 engaged in this service. A similar comparison shows 1 passenger to have been killed for each 1,985,153 passengers carried, or for each 47,588,966 passenger miles accomplished, and 1 passenger injured for each 183,822 passengers carried, or for each 4,406,659 passenger miles accomplished. An assignment of accident statistics to the territorial groups shows great diversity in the relative safety of travel and railway employment in the various sections of the country.

PROVINCIAL BOARD OF HEALTH OF ONTARIO.—Peter H. Bryce, M.D., Secretary, Toronto.

PROVINCE OF QUEBEC.—Elzear Pelletier, M.D., Secretary, Montreal.

BUENOS AYRES, 580,371 : Albert B. Martinez, Director-General of Municipal Statistics.

During the month of March there were reported 1037 deaths, of which 471 were under five years of age. The annual death-rate per 1000 was 27.7. From epidemic diseases there were 126 deaths, and from consumption, 101.

MEDICAL EXCERPT.

By T. P. Corbally, A.M., M.D.

Early Phlebitis in Tuberculous Subjects.—Members of the medical profession have lately directed their attention to conditions that may be called the early premonitory symptoms of tuberculosis. If the observations made in this direction prove to be applicable, even to special cases, they may lead to further investigations and bring other facts to light that may be of advantage, either as prophylactic measures or as therapeutic remedies in the kind of cases to which they relate. In the preceding number of The Sanitarian (page 57) was given the report of M. Destrée on the premonitory symptoms of tuberculosis as observed in the inequality of the pupils. Attention is now invited to phlebitis as another premonitory symptom to be found in certain cases. The fact that these observations have been made by men eminent in the profession will no doubt induce others to take notice of similar conditions. Whether the facts as here given can be found compatible with the theory of the bacilli or otherwise can be determined only by careful observation.

M. Hirtz read a paper on the subject to the Société Médicale des Hôpitaux (*Progrès Médical*, June 16th), in which he showed that, contrary to what takes place usually at the terminal period, and which may be attributed to a cachectic condition, some facts prove that early phlebitis—*la phlebite precoce*—is caused either by primary or by secondary infection. Baréti and Weigert have pointed out tuberculosis of the veins, but not those of the extremities. Two facts go to prove that this phlebitis may be the first symptom of a tuberculosis previously latent and unobserved. The first case observed was in 1881 : Mlle. de S——, whose father was neurotic and her mother of a tuberculous family, was taken, in 1880, with an attack of acute phlebitis of the internal saphenous vein of the left leg. The diagnosis was made by Noël Gueneau de Mussy. But the cause escaped the early examiners ; the most careful examination of all the organs did not

then reveal any apparent lesion. At the end of three weeks, however, the phlebitis was removed. Six months later the patient left for Nice, where she was attacked, at the end of six weeks, with acute pulmonary tuberculosis, from which she soon afterward died.

The second case is cited by Vaquez. The phlebitis occurred in a young girl nineteen years of age, of a chlorotic constitution, in which case a careful investigation revealed some trifling lesions indicating a tuberculosis in process of evolution. The phlebitis of the right leg was cured, and at the end of three months the patient left the hospital, apparently well and her general health restored.

Two years later she succumbed to the advance of a subacute tuberculosis. These observations show the relative frequency of phlebitis in the first stages of tuberculosis. The venous symptoms may precede many weeks or even many months the appearance of the pulmonary bacillus.

PATHOLOGY AND STATISTICS OF ROUND (GASTRIC) ULCER IN THE HOSPITALS OF PARIS.—M. Gilles de la Tourette made the following report to the Société Médicale des Hôpitaux, which was afterward discussed at some length (*Progrès Médical*, June 16th).

From March 15th to April 15th last there were 18 cases of ulcer in the general hospitals, 13 females and 5 males, which were diagnosed as round ulcers—"ulcère rond." These 18 cases were observed in 4703 patients, of whom 2830 were men and 1873 women. The proportion was therefore one case in 566 men and one in 144 women. Pathogenically they were classified as 10 alcoholic, 6 hysterical, 1 from internal traumatism—ulcer of the duodenum caused by a voluminous hepatic calculus—1 from an indeterminate cause, in a female cook. The two most important etiological factors were alcoholism and hysteria.

M. Mathieu thinks that there ought to be more round ulcers than the proportion given in these statistics. Alcoholism and hysteria are not the only factors to be considered, for hyperhydrochlorosis plays a very important rôle in the production of this affection. It is undoubtedly common in alcoholic and in hysterical and neurotic subjects. Hysterical cases with

hæmatemesis ought, then, to be considered as suffering from ulcer of the stomach and treated as such if we wish to avoid unpleasant results.

M. Rendu advanced, in support of the views of M. Mathieu on the influence of neurasthenia, the case of a woman, sixty-six years of age, who was taken with hæmatemesis after a great fright. She died in forty-eight hours afterward, and at the autopsy a well-defined round ulcer was found in the stomach.

M. Galliard has embodied in his thesis the history of tropical diseases of the stomach from lesions of the nervous system ; he could not doubt the importance of the pathogenic conditions attending icterus.

THE BACILLUS OF ASIATIC CHOLERA IN CONTACT WITH TOBACCO LEAVES AND IN CIGARS.—Dr. Wernicke, in *Hyg. Rundschau*, No. 21, 1893, publishes the following interesting experiments which we take from the *Giornale della Reale Societa d'Igiene*, April, 1894: "Can the manipulation of cigars, which is necessary for their manufacture and sale, be a cause of cholera infection?" The author determined to solve the question by careful experiments and used four kinds of tobacco: the Havana, Sumatra, Brazilian, and the seed-leaf. He made cigars, using in the preparation of the tobacco leaves water to which the cholera bacilli had been added, and by placing within the cigars a small piece of cloth impregnated with a culture in broth for one day, and rolling up the last or outer layer or leaf with hands moist with water containing the specific bacilli. After remaining twenty-four hours in the oven the cigars were used to inoculate cakes of gelatine. The inoculation was effective only with the pieces of cloth placed within the cigar—on the tobacco leaves the cholera bacilli were already destroyed by the development of other micro-organisms. Wernicke also sought in vain for the presence of cholera bacilli in cigars manufactured in Hamburg, when the epidemic there was most severe, and while the cigars were still moist and contained a great number of other species of bacteria.

In all cases, after three hours of drying, the cholera bacilli were dead ; after two hours they were still alive in the Havana

tobacco ; one hour was sufficient to kill them in the Sumatra and seed-leaf tobacco, and half an hour in that from Brazil. The last three kinds of tobacco had an acid reaction, while that from Havana was alkaline.

In an infusion of tobacco of 5 per cent sterilized, the cholera bacilli lived 33 days, but did not increase in number ; in a more concentrated infusion they were destroyed at the expiration of twenty-four hours.

Wernicke has, besides, verified the experiments of Tassinari and of Müller on the action of microbes of tobacco smoke ; when it was made to pass directly through broth culture half a cigar was sufficient to kill the cholera bacilli in five minutes.

HOW TO RECOGNIZE HORSE-FLESH.—W. Bräutigam and Edelman have published in the *V. J. Schrift ü. Chem. Nhrg. Genussmittel*, 1893, No. 209, a report describing a means of detecting "carne di cavallo" (horse-flesh) *Giornale della Reale Societa d'Igiene*, April, 1894. Discrimination is based on the fact that horse-flesh always contains glycogen, and on the property that glycogen has to assume a red color in the presence of iodine. Fifty gr. of meat finely minced and boiled with 200 cmc. of water ; to the liquid obtained after cooling dilute nitric acid is added, to separate the albuminoids ; it is then filtered. Over the filtrate is carefully sprinkled a little water saturated with iodine, the solution being prepared in the cold. If the glycogen is present, a ring is formed at the point of contact of the two liquids on the surface, of a color varying from a red to a violet.

ARTIFICIAL INGUINAL HERNIA.—Dr. Schultz, a military surgeon in the Russian Army, assures us (*La Cronica Medica*, Lima, May 31st, 1894) that it is not uncommon to observe in Russia artificial inguinal hernias made in order to escape military service. There are specialists who perform the following operation : After having made a fold of the skin they introduce into the inguinal canal an instrument very similar to that used to stretch the fingers of gloves, then this instrument is forcibly opened and dilates the canal, producing much pain. It is only necessary after this to perform some severe or violent gymnastic exercises.

Dr. Schultz claims that these artificial hernias are easily recognized from the following conditions: the irregular form of the ring, the disproportion between the diameter of the ring and the small volume of the protruding intestine, and finally by the great sensitiveness of those hernias.

RUPTURE OF THE KIDNEY.—M. Gérard Marchant presented an interesting memoir (*Gazette Hebd.*) to the Société de Chirurgie on April 11th, describing a case of rupture—*déchirure*—of the kidney, for which he was obliged to perform the operation of nephrectomy.

"The patient was a man of thirty-seven years of age, who was thrown from his phaeton against the curbstone. The fall produced a contusion between the lower border of the ribs and the crest of the ilium. The patient immediately felt a severe pain, and his physician, who was summoned immediately, found all the symptoms of an internal hemorrhage marked by an increase of temperature, small pulse, and a state of syncopy. The following day a new phenomenon appeared, retention of urine, which when drawn off was found to contain blood in great quantity. The hæmaturia persisted during forty-eight hours, then the urine became clear.

"I was called to see the patient on the fourth day after the accident, and I found three distinct phenomena: the abdomen was greatly tumefied, with great tenderness, and vomiting, so that the existence of peritonitis was discussed; in the left lumbar region great tumefaction independent of the other symptoms, caused by the contraction of the muscles of the abominal wall; this rendered the exploration very difficult. Finally, in the neighborhood of the inguinal canal, was a very considerable ecchymosis, and a second ecchymosis, rather smaller, was found near the base of the penis; and also the spermatic chord presented, throughout its whole length as far as accessible, an amount of infiltration greater than I had ever before had an opportunity to examine—an infiltration which appeared to extend to the ecchymosis at the base of the penis.

"In view of these different symptoms I did not hesitate to make a diagnosis of rupture of the kidney, and I proposed immediate surgical interference, for the purpose of examining

that organ and of exploring it thoroughly, and then doing whatever the nature of the lesion rendered necessary. I insisted particularly on being permitted to interfere immediately, because in 1886 I saw a man die at the Bicêtre from rupture of the kidney because a correct diagnosis had not been made. As the patient was an adult, and we know that the peritoneum is in such cases intact, I made an incision in the lumbar region. In the child the peritoneum is always in that location involved, and in such cases it is necessary to act very differently.

"I made a very lengthy incision in the lumbar region, so as to give the best possible opportunity for examination. I went down through the muscles and reached the aponemosis, which was infiltrated with blood. As soon as this was perforated a quantity of blood gushed out. I separated the tissues as rapidly as possible, above and below. I removed a great many clots which were found behind the aponemosis, and not finding any trace of urine infiltrated, I went down to the kidney, which was separated into two parts by a large rent. The lower part came readily into the wound. I placed a forceps on its pedicle. The upper fragment was drawn down with difficulty, for as soon as I made the least traction a stream of blood appeared. That occurred because I neglected to incise the renal capsule. As soon as this was opened I easily removed the covering from the superior portion, and then easily placed a forceps on its pedicle. I removed both the parts, and having ligated the pedicles removed the forceps, then the wound was closed, drainage tubes having been carefully placed in position. The after treatment was very simple, and at the end of three weeks the patient was completely cured.

"I wish to call the attention of the members to the specimens which I here present. You can see that the kidney was torn obliquely and divided into two pieces. On each of these pieces you will observe the presence of little spots of renal substance entirely bloodless and evidently about to mortify. This is a most important point to observe, because it shows how necessary it is for the surgeon to act promptly and to perform nephrectomy before septicemia sets in. I think that when a rupture of the kidney exists the following course

should be pursued by the surgeon : Make an incision for the purpose of exploring the lumbar region ; examine the kidney, and, according to the extent of the lesion, either unite it with suture or perform nephrectomy "

The same subject was also the subject of a report (*La France Médicale*) to the Société de Chirurgie on April 4th, 1894, by M. Tuffier. He said : " I have attended five cases of rupture of the kidney. In one I was obliged to operate ; the other four cases recovered without interference. The first case was a man, about forty years of age, who had received a severe contusion in the lumbar region. The injury was followed by great swelling in the lumbar region, hæmaturia, and finally paralysis of the lower limb, which could be explained only by compression of nervous plexus, due to an abundant effusion into the tissues. An operation was performed, the liquid removed, and it was found that the kidney had been wounded. The parts were brought together with suture. The result of the operation was satisfactory, and the patient recovered without leaving any injury of the urinary organs.

" The other cases were injured in the same way, the effusion of blood was abundant, but there was no paralysis, and the hemorrhage seemed to be arrested. In these four cases I refrained from operating, and all the patients made good recoveries.

" These cases prove that early surgical intervention in cases of renal lesions ought to be exceptional, that hæmaturia is not by any means a sufficient indication for performing an operation, and that interference is rarely indicated except in cases in which the effusion of blood seems dangerous to the life of the wounded."

M. Bazy : " I have lately had two cases of renal contusion in which the hæmaturia lasted for six weeks, which recovered without surgical interference."

BROMIDIA AS A SEDATIVE AND HYPNOTIC.—Messrs. Battle & Co., of St. Louis, have sent us the copy of a letter from Dr. Angelo de Bellomi, of Citta di Amandola, Italy, as follows :

" I am pleased to inform you of the successful results by the use of your bromidia as a hypnotic and sedative. I pre-

scribed it for a lady suffering from severe vomiting due to pregnancy, and which threatened to cause abortion from denutrition. I had previously tried opium, chloroform, creosote, and oxalate of cerium, all without effect. I gave ten drops in a little sweet wine three times a day before meals. The vomiting ceased the first day; four days later I was able to discontinue the use of bromidia, and now after a month there has been no return of the vomiting, and the patient is perfectly well.

"I have found bromidia excellent in delirium tremens accompanied by insomnia, also in the delirium of typhoid, and in bronchitis with neurasthenia following influenza.

"In a case of chronic nephritis where all kinds of hypnotics, anti-neuralgics, and analgesics had failed to give relief, bromidia, in doses of a teaspoonful morning and evening, gave relief at once, and in a few days effected a complete cure. After such encouraging results, I am sure bromidia has a brilliant future before it."

SOMATOSE MOTHER'S MILK.—The chief problem in the artificial feeding of infants has been to devise some method of preparing cow's milk by which it will resemble human milk as much as possible, both in chemical composition and physical properties. To do this, Dr. Lewis Starr, of Philadelphia, states, in his book on the "Nursery," that "it is necessary to reduce the proportion of casein, and to increase the proportion of fat and sugar, and to overcome the tendency of the casein to coagulate into large, firm masses upon entering the stomach. While the albuminous principle of woman's milk forms a very soft and almost flocculent coagulum when acted upon by the gastric juice, the casein of cow's milk coagulates into firm, thick masses, which are digested with difficulty, and frequently produce vomiting and diarrhœa. To prevent this occurrence it is necessary that water be added in sufficient quantity to the milk, but, on the other hand, by the free dilution required the percentage of albuminous principles in a given volume suffer a marked decrease and the milk loses much of its nutritive value. If we attempt to compensate for this by administering larger amounts of the diluted milk, the child's digestive apparatus is overtaxed. On the other

hand, if we endeavor to counteract the deficiency in albuminous matter by the addition of farinaceous substances, as is so often done, we supply the child with material which it is unable to digest and assimilate, and which is apt to undergo fermentative changes and act as a gastric irritant. For these reasons physicians interested in infant-feeding have sought for some nitrogenous food substance which would increase the nutritive value of cow's milk and approximate it as closely as possible to woman's milk. These demands are best met by somatose, a new food-product consisting essentially of albumoses derived from meat, which has already been extensively employed for that purpose. By addition of fat (cream), sugar, and somatose to properly diluted cow's milk, it is converted into substitute for human milk, more perfectly than any yet obtained. A preparation known as 'Somatose Mother's Milk' is now furnished by many milk sterilizing institutions in the large cities of Germany, but can be conveniently prepared in the household in the following manner: To 1 litre of cow's milk (morning milk) add 730 cubic centimetres water, 10.7 grammes somatose, 40 grammes sugar of milk, 33.5 grammes fat (that is, 71 grammes cream containing on an average 50 per cent fat). The quantity of fat in the cream should be determined before its addition Place the somatose in a glass vessel containing 20 c.cm. of boiling water, and stir with a glass spatula, allowing the mixture to stand until the somatose is dissolved, which will require about half an hour. Then add the remainder of the water, together with the sugar of milk, and stir until dissolved. Mix the milk and cream, shake well, and add to the somatose solution. After a thorough mixture has been effected, pour into bottles and sterilize in the customary manner."

Dr. Albert Bosse, in an article recently published (*Hamburgischen Zeitung*, No. 182) on the artificial feeding of infants, states this problem has been solved by the introduction of "Somatose Mother's Milk." He calls attention to the fact that in this form cow's milk can be completely utilized in the organism; that it forms the same loose curds as woman's milk; that it is as fully digestible and assimilable as the latter. It must also be remembered that inasmuch as somatose contains the nutrient salts of meat, especially the

phosphate of lime, which is of so great importance in the formation of bone and muscle, it will prove of twofold value in the case of children suffering from rickets, scrofula, and other diseases dependent upon the errors of nutrition, both as a nutrient and as supplying the organism with substances in which it is deficient.

MERCAURO.—The following letter is published by the authority of the writer:

MASONIC HOSPITAL ASSOCIATION, CHICAGO, ILL., June 9, 1894.

GENTLEMEN: In answer to your recent question I am pleased to say that my attention was first directed to the preparations by my old friend, Dr. E. A. Wood, of Pittsburg, Pa. Being somewhat of a sceptic regarding new preparations of a special character, I am free to say that had a less conservative and observing physician brought the matter to my attention, I should have been less prompt in giving them a trial. I have long believed in the therapeutical efficacy of gold, and, in common with other physicians, had regretted the paucity of our resources in that direction. The formulæ advocated by Dr. Wood appealed to me at once as rational and likely to prove valuable. I therefore began the use of arsenauro and later of mercauro with the most gratifying results. As a nerve tonic and alterative, arsenauro is far superior to the auri et sodii chloridi, heretofore the only gold preparation. In chronic inflammatory and degenerative processes affecting the nervous system, the bromide of gold and arsenic (arsenauro) is a most reliable remedy. In the late lesions of syphilis, particularly those of the nervous system, I have found mercauro of great value. It is valuable in both late and early syphilis, in cases marked by extreme debility or attended by some complicating cachexia. As is well known, this class of cases is apt to prove troublesome under ordinary anti-syphilitic measures.

Very truly yours,

G. FRANK LYDSTON,

Surgeon-in-Charge.

TO E. M. JOHNSON CO., 41 PLATT STREET, N. Y.

EDITOR'S TABLE.

SANITARIAN, AUGUST NUMBER, 1894.

☞ ALL correspondence and exchanges and all publications for review should be addressed to the Editor, DR. A. N. BELL, Brooklyn, N. Y.

THE COMMUNION-CUP.

THE alleged danger of communicating disease by means of the communion-cup is far from being a new question. Even before, but many times since the general adoption of the germ theory of communicable diseases, it has been discussed and inquired into by close observation, extensive correspondence and otherwise by medical practitioners and sanitarians of the widest experience, but hitherto, so far as known to the writer, with wholly negative evidence. Hence, the particularity in detail by the Rev. Charles Forbes, of Rochester, N. Y., two months ago, on the occasion of introducing separate cups, corresponding in number with the number of communicants, giving his reasons for the innovation, was a surprise to us; and, if true, a discreditable reflection upon our special —and for many years persistent—attention to extensive correspondence on such matters, that the discovery should first be made by the Rev. Mr. Forbes. According to the report of his remarks, which has been extensively circulated through the public press, he said that he had been convinced by his own observation of scientific experiments conducted by himself and by a professor of Rochester University, "that the individual communion chalice should be adopted as a preventive of disease and as a public object lesson in cleanliness." He referred to the circumstance that "*an epidemic of diphtheria, which recently cost many lives at San José, Cal., was traceable, without a shadow of doubt, to the fact that many persons had partaken of wine from a communion-cup to which the lips of a diseased man had been touched.*"

He said also that the new method would be an "excuse destroyer for the overparticular and those who absent themselves from the Lord's table upon various pretexts;" and

then he went on to justify such excuses, in language not overnice in its suggestions. "People who are ill and those having chronic diseases," he said, "feel themselves forced away from the communion-table. People who are sensitive are prevented from coming. Colored people who are sincere Christians do not partake because they dread the prejudices of the general public. In many large churches not half the membership is present at the communion service. This is largely caused by the prejudices against the existing system. Many ladies have repeatedly passed the cup untouched because some professing Christian with a tobacco-stained mustache had preceded them in partaking of the wine."

One of the most regular correspondents of THE SANITARIAN is the Secretary of the State Board of Health of California, monthly. There being no mention of any such epidemic as the one referred to by the Rev. Mr. Forbes, in his correspondence, the editor hereof wrote to the Health Officer of San José, requesting a statement of facts in the case. The following is his reply:

"SAN JOSÉ, CAL., June 23, 1894.

"DR. A. N. BELL, EDITOR OF THE SANITARIAN: Your letter of June 19th, in reference to an epidemic of diphtheria from drinking wine out of communion-cups, was received. In reply would say that the reverend gentleman was entirely misinformed, as there was no such thing ever heard of here; nor do I think there have been over two or three cases of diphtheria in the town during as many years.

"Hoping you are well and your good work prospering, I am

"Yours truly,

"J. R. CURNOW,

"*Secretary Board of Health.*"

Comment is unnecessary.

SHIFTING THE GARBAGE FILTH from New York City to Riker's Island, on account of the recently enacted harbor law against dumping it "at sea," within the influence of the current to strew it along the shores, has deservedly encountered the opposition of the United States authorities at that station, and enlisted the aid of the State authorities to know what to

do next. The Governor instructed the State Board of Health to investigate. That body in turn instructed its representative in this city, Dr. Cyrus Edson, to investigate.

All this was done secretly. So, while Mayor Gilroy, Street Commissioner Andrews, Lieutenant Delahanty, and the Citizens' Committee were struggling with the Riker's Island problem, Dr. Edson was quietly looking over the ground.

Dr. Edson's report covered the whole situation in detail. It describes the exposed garbage that covers the south end of Riker's Island, and then shows that its existence as a public nuisance and menace cannot be charged against the Health Board. The report contains a verbatim copy of a letter by President Wilson, of the Board of Health, written in 1892 and addressed to the committee then considering the question of dumping garbage on Riker's Island.

President Wilson at that communication consented to the use of the island for that purpose, but insisted that between March 15th and November 15th of each year the garbage should only be dumped below the low-water mark. As the garbage dumped by Commissioner Andrews rises from six to twenty feet above high-water mark, the Health Board says its instructions have not been carried out.

Dr. Edson then recommends that the State Board of Health order all dumping of garbage at the island to cease for sixty days. If this is done it is said it will nullify the plan of Lieutenant Delahanty for dumping it in deep water within the Riker's Island crib.

This was about July 1st, and the stench ignored the orders. A compromise was effected by which the garbage was permitted to be dumped at sea again under certain limitations; and for this, either the shore-setting current or the dumpers, or both, have had so little respect that the Manhattan Beach bathers and the United States authorities at Sandy Hook have a return of the persistent nuisance. Harbor restrictions are again ordered. Dumping within certain limits permitted in the vicinity of Riker's Island resumed, conditional upon its disinfection, and this has been undertaken.

Dr. O'Donohue, President of the State Board of Health, reported to the Governor, July 18th, that he had made a personal investigation, and found that the complaints were well

founded. . . . "On the 17th inst., when I made a personal inspection of the island, the stench arising from the decomposing garbage was extremely offensive.

"When the winds are prevailing in the west or northwest the effluvia which permeates the atmosphere around Riker's Island is wafted to College Point, and even Flushing, on Long Island.

"The dumping of garbage on Riker's Island was discontinued on the 11th inst., and is now being carried out to sea. There is a disinfecting process now in operation on the island which consists in the treatment of sea water by electricity; the fluid thus treated is called electrozone, and large quantities of this are being poured over the garbage on the island, with good effect. It will still take some time to disinfect the entire mass of garbage with the present disinfecting plant.

"The dumping of garbage on Riker's Island was recommended under certain conditions. The principal one was that the garbage should be covered with earth immediately on its deposit there. This has not been done. The Board of Health of the city of New York have reported from time to time upon the unsanitary conditions surrounding the island, but for some reason their recommendations and reports have not been heeded. The present condition has been permitted, notwithstanding their recommendations.

"Had the original recommendations been carried out no offence would come from the deposit of garbage on this island, and the continuance of the deposition of garbage there should be interdicted under the present conditions. The object of dumping this garbage here was, first, to get rid of it, and at the same time to reclaim lands. This latter, while laudable, should not be done at the expense of the public health.

"There are many ways in which garbage can be disposed of. In some cities the method obtains in the separation of garbage, such as kitchen refuse from ashes. The ashes are made available for filling purposes. The kitchen refuse is cremated in some instances, and in others it goes through a treatment which extracts the oils from it, this finding a ready market and is a valuable commercial product. The residue is valuable for fertilizer.

"Again, garbage can be taken entire out into the sea and

deposited. This necessitates the construction of boats of sufficient draught to put to sea far enough so that the floating garbage cannot be carried back by the incoming tides and deposited on the shores, and also to preclude the possibility of obstruction to navigation by that part of the garbage which would sink in shallow water.

"Whichever of these methods may be selected is merely a matter of comparative expense. The condition of Riker's Island is now under control.

"The authorities in New York are doing all that is necessary to do to abate the nuisance at Riker's Island, and in a little time the mass of garbage there will become innocuous, and past experience will preclude them from entertaining this method of disposing of garbage in the future."

Possibly this summer's experience, under the restrictions of the harbor law, will have the effect of enforcing the city authorities to resort to the only practical solution of the question—*cremate the garbage.*

BROOKLYN'S WATER SUPPLY is becoming both scant and foul, but the Common Council, according to the newspaper reports, have struck for patronage—of more importance to them than the danger of cholera—and they appear to have made it the condition of the needful expenditure for the protection of the public health. July 20th the mayor, in calling a special meeting of the Council and urging them to a sense of their duty, refers to a report by the Commissioner of City Works showing that a drought of thirty-six days, perhaps even less, would bring about a very serious situation—would completely exhaust the reserve in the storage reservoir. A report of the Health Commissioner was also referred to as follows:

"The accompanying report of our chemist of the analysis of the samples of water furnished the department by yourself, which I hand you this day, the sources indicated by number, would indicate the necessity of some change being made to throw out certain sources of supply, notably No. 10, the analysis of which shows it to be very high in free ammonia, albuminoid ammonia, and vitriols, and it is undoubtedly a strong solution of ordinary open sewer drainage. This supply should

be cut off absolutely and at as early a day as possible. Its effect in the contamination of the general water supply cannot but be very deleterious to the general public health."

We are gratified to learn, just as we go to press, that appropriation has been voted.

CHOLERA is making such headway in Europe and Asia as to suggest the utmost vigilance by the port quarantine service and such home sanitation as would not give it a leg to stand on. Throughout Russian Poland the disease has been and is still raging, and in St. Petersburg the new cases number over two hundred a day, with a mortality of one third. The stringent precautions taken in Germany have not prevented the disease from spreading to that country, as it is reported to be prevalent at Dantzic, and at this date (July 20th) reported one case at Berlin. It has also made its way into Austria, and is now epidemic in Galicia.

BOILED WATER FOR SCHOOL CHILDREN.—The prefects in the several French Departments have issued orders to the various schools, requiring that all drinking-water supplied to the pupils shall be boiled, and that the cleansing of the floors, desks, etc., of the school-rooms is to be no longer done with dry dusters and brooms, but with moist cloths, to prevent the spread of dust. Once a week a thorough cleansing is to be carried out with an antiseptic.

VISIBLE DISEASE GERMS.—July 7th Fruit Inspector Wilson G. Fox reported to Sanitary Superintendent Roberts, New York City Board of Health, that he had seized and condemned 2600 pounds of green fruit which was exposed for sale. The fruit was removed to the offal dock.

THE EMANATIONS FROM STABLE MANURE, particularly when in a state of putrefaction, are a prolific cause of sore throat and promotive of diphtheria.

AMERICAN DRIED APPLES are declared by Berlin sanitary inspectors to show traces of zinc and other dangerous elements.

NEW BOOKS AND BOOK REVIEWS.

ANY BOOK reviewed or advertised in THE SANITARIAN costing $1.50 or less will be sent *free* to any present subscriber sending the name of a new subscriber, or to any new subscriber on receipt of the full subscription price sent on his own account; or any book so reviewed or advertised costing more than $1.50 will be sent at a discount of that amount.

LES EAUX D'ALIMENTATION, épuration, filtration, stérilisation, par le DR. E. GUINOCHET, pharmacien en chef de la Charité. 1 vol. in-18 jésus de 369 pages, avec 52 figures, cartonné. (*Encyclopédie de chimie industrielle.*) 5 fr. Librairie J. B. Baillière et Fils, 19 Rue Hautefeuille (près du Boulevard Saint-Germain), à Paris.

Pure drinking-water has come to be regarded as an essential necessity to the maintenance of health. The subject is well known to have engaged the attention of the most enlightened people from the remotest times. But the definition of the purity necessary for drinking-water has varied with the progress of science. People were at first satisfied with the organoleptic properties, and at a later period its chemical properties were investigated. To-day it has become necessary to add to these the knowledge of certain biological properties—that is to say, the knowledge that it does not contain microbes, or at least that it contains only a small number of those that are non-pathogenic.

There is, however, to-day a very marked tendency to consider, in the determination of the deleterious qualities of potable water, only the presence or the absence of microbes.

The successive changes of opinions regarding the purity of drinking-water has necessarily influenced, not only the manner of effecting the filtration, but also its mechanism, in a physical as well as in a chemical point of view.

M. Guinochet has studied, and the work before us describes, first the central filtration, as means of filtering constructed beside rivers, sand filters, wells, divers industrial means, and purification by electricity.

Then follows domestic means of filtration, comprising :

1. Purification by chemical means.

2. The various forms of domestic filters ; French and foreign.

3. The cleansing and the sterilizing of filters.

The last part of the book is devoted to sterilizing by means of heat, describes the effects of heat on water, and the various apparatus for sterilizing it.

The work of M. Guinochet is not merely a very clear *résumé* of the most recent works published on the subject, it is also a description of the very interesting researches and experiments made in the laboratory of Professor Straus.

Chemists, pharmacists, hygienists, and others may consult this volume with both interest and profit.

PAIN—in the Neuro-pathological, Diagnostic, Medico-legal, and Neuro-therapeutic Relations. By J. LEONARD CORNING, A.M., M.D., Consultant in Nervous Diseases to St. Francis Hospital, St. Mary's Hospital, the Hackensack Hospital, etc.; Fellow of the New York Academy of Medicine ; Member of the New York Pathological Society, the Medical Society of the County of New York, and the Medical Society of the State of New York, etc. ; Author of " Treatise on Headache and Neuralgia," " Brain-Exhaustion, with some Preliminary Considerations on Cerebral Dynamics," " Local Anæsthesia," " A Treatise on Hysteria and Epilepsy," " Brain-Rest : Being a Disquisition on the Curative Properties of Prolonged Sleep," etc. Illustrated. Pp. 327. Philadelphia : J. B. Lippincott Co.

No subject is of more interest, or a good knowledge of which of more practical importance to the medical practitioner than that which is the subject of this treatise. Moreover, this book is the outcome of the trend of the author's study and previous publications during a period of a dozen years or more, and is therefore the gist of practical knowledge gained from all its outlines.

It is divided into two parts : Physiological, Pathological, and Clinical ; and the Special Therapeutics of Pain. The subject is necessarily based upon a thorough knowledge of neurology in all its bearings—a knowledge which appears in the

opening chapter of the first part, on the physiology, conduction, and definition of pain. This is followed by the pathology of pain in its different aspects—neuritis. Pains located in definite nerve areas—neuralgia; pain associated with diathesis—rheumatism and gout; pains within the cavities of the body—in the head, back, thorax, abdomen. The diagnostic value of pain; its clinical and medico-legal significance and relations; and of insomnia and melancholia of pain: these are the significant chapter titles of the first part. The second part is subdivided in like manner, and each chapter is a terse statement of the particular division of the subject treated of, rendering the work one of much practical utility as a ready reference for the busy practitioner, no less than for medical students who would become familiar with one of the most essential aids to a correct diagnosis, without which all medical treatment is haphazard.

ESSENTIALS OF DISEASES OF THE EYES, NOSE, AND THROAT. In Two Parts. Part I., Essentials of Refraction and the Diseases of the Eye. By EDWARD JACKSON, A.M., M.D., Professor of the Diseases of the Eye in the Philadelphia Polyclinic and College for Graduates of Medicine; Attending Surgeon to the Wills Eye Hospital; Member of the American Ophthalmological Society; Fellow of the College of Physicians of Philadelphia, etc. Part II., Essentials of Diseases of the Nose and Throat. By E. B. GLEASON, S.B., M.D., Surgeon-in-Charge of the Nose, Throat, and Ear Department of the Northern Dispensary, Philadelphia; Fellow of the American Academy of Medicine; Member of the German Medical Society, of the Polyclinic Medical Society, of the Philadelphia Pathological Society, etc. Saunders' Question Compends, No. 14. Price, $1. Philadelphia: W. B. Saunders.

This is a particularly timely compend of a great deal that has been published in medical periodicals and books during recent years, insomuch as to really require a compend for both practitioner and student, alike necessary for easy reference and for condensed study.

NOTES AND NOTICES.

THE VANISHING HOSTS OF THE UNEMPLOYED.—We are inclined to accept certain evidences that have come to our notice which indicate that a turn of the tide of business affairs will soon be apparent in all quarters. A return of industrial prosperity after a period of depression almost always comes without observation. The good times are upon us even while we are still imagining ourselves in the midst of bad times. Our readers will remember that, with perhaps more care and thoroughness than any other journal in the country, the *Review of Reviews* in the winter and spring took occasion to ascertain to what extent men were out of employment in the principal American centres of population and industry, and what measures had been devised for the relief of the unemployed. We have now, just before sending this number to press, again received direct and authoritative information from nearly all the cities mentioned in our discussion of relief measures early in the present year. We shall not attempt to report in detail, but we are glad to be able to state that almost everywhere it was found possible several weeks ago to abandon all special relief measures, and to disband the Citizens' Committees under which relief was administered in most of the large towns.—*From "The Progress of the World," July Review of Reviews.*

"BLOOD IS THICKER THAN WATER."—Once upon a time, while guest on board a big English battleship, some officers of the ward-room sought to tease me in regard to relative merit of American and English sailors in certain naval engagements of which I had a sadly hazy idea. I was slowly gathering steam for a patriotic explosion, when one of my British sailor friends turned the tables in my favor by this little jerky speech:

"That may all be true, but I was at the bombardment of Alexandria, and we were in a bad fix, and all the warships of other countries drew off and left us to fry in our own fat, and then the Americans came and helped us. They landed their men; they kept order in Alexandria; they acted contrary to orders; but then they said that '*blood is thicker than water.*'"

At this the whole ward-room burst into a cheer, and nothing more was heard of *Chesapeake* and *Shannon* yarns.

Then another weather-beaten marine barnacle told his little story. "I shall never say another hard word against Yankees," he said, in a voice like a muffled fog-horn. "When that hurricane struck Samoa, our ship just managed to steam out of the harbor and escape total wreck. As we steamed anxiously and very slowly through the howling wind and blinding sea we could make out the Americans in the rigging of the *Trenton*—and they were all in the presence of death. But they didn't think of that. They gave us three cheers, and it made the hearts of our men jump up and choke them when they heard those cheers. And it made me feel at last that '*blood is thicker than water.*'"

So on the night of May 25th Americans and Englishmen sat down to a feast intended to once more emphasize the fact that the great English-speaking family has a mission of civilization to perform, that we are of one parent stock, that when we quarrelled it was because we did not know how to appreciate one another's good qualities, and that in future war between England and America is out of the question so long as Englishmen and Americans speak the same language.

The key-note to the banquet given by Englishmen to the officers and men of the *Chicago* was furnished by one after another of the entertainers. They once more told the story of how the British men-of-war lay off the mouth of the Pei-Ho River, near the ugly mud flats which stretch out before the Taku forts which bar the approach to Tientsin and Pekin. I have been up into that country, and heard this story over and over again from eye-witnesses. The English were again in a tight place, and again the Yankees overruled their written orders, to obey the great unwritten law, "*blood is thicker than water.*" Admiral Erben, of the *Chicago*, and the venerable English admiral of the fleet, Phipps Hornby, both dwelt upon the assistance given by American bluejackets to those of old England far away in Chinese waters.

This dinner was a remarkable one for the hearty and spontaneous manner in which it was conceived and carried out; for the enthusiasm with which Englishmen of every profession crowded for the right to be present and do honor to the

Americans among them. For the past week the main fashionable question has been, Are you going to the *Chicago* banquet? or, Have you met Captain Mahan?—*Poultney Bigelow, in Harper's Weekly.*

THE CURSE OF THE NEW YORK TENEMENT-HOUSE.—The greatest evil which ever befell New York City was the division of the blocks into lots of 25 by 100 feet. So true is this that no other disaster can for a moment be compared with it. Fires, pestilence, and financial troubles are as nothing in comparison, for from this division has arisen the New York system of tenement-houses, the worst curse which ever afflicted any great community.

The fact that so much of the land is held in such parcels is our misfortune, but the obstacle is not insuperable, as shown by our office buildings. The difficulty has arisen and persistently flourishes, owing entirely to our lack of knowledge of the art of scientific planning. For who would waste money in erecting unnecessary walls, halls, etc., if he knew how to obtain the same amount of rentable space much better lighted without them? By the present system the ground is encumbered, the light obstructed, and the structure rendered unhealthy and unfit to live in; and all this is accomplished at a vastly increased expense over what the same rentable space, well lighted, might be obtained for. Great sums of money are yearly squandered upon making the structures unfit to live in. Then other great sums are contributed by charitable people to relieve the distress which these horrible structures engender. Hospitals are kept full, children die, misery, disease, and crime flourish, because the people are huddled together without light and air; and all this happens simply because the principles of economical planning are not understood. Verily ignorance is expensive!—*From "The New York Tenement-House Evil and its Cure," by Ernest Flagg, in the July Scribner.*

ALMOST A PERFECT CLIMATE.—The climate of the Sierra, although not so very pleasant on account of the winds, is extremely salubrious, the heat never becoming enervating, as it does not exceed 90° F., while the nights are deliciously cool.

Lung diseases are unknown, and the sanitary condition of the Sierra may perhaps be inferred from the reply of an old American doctor, who lives in the now almost abandoned mining place, Guadalupe-y-Calvo. When I asked him to give his experience as to the health of the people, he said: "Well, here in the mountains it is distressingly healthy. Despite a complete defiance of every hygienic arrangement; with the graveyard, a tannery, and the sewers at the river's edge, no diseases originate here."—*From "Among the Tarahumaris—The American Cave-Dwellers," by Dr. Carl Lumholtz, in the July Scribner.*

THE VERY END OF THE EARTH.—At Nerano there is a break in the cliffs, and the overhanging hills slope more gently down to the water's edge. Above, in the shoulder of the mountain, below the sharp-peaked Santo Constanzo, lies a little village called Termini. The fishermen say and believe that Christ, when He had walked over the whole earth with His disciples, reached this point, and declared that it was the end of the world; hence the name.—"*Coasting by Sorrento and Amalfi," by Marion Crawford, in the July Century.*

LADY MONTAGU'S ACCOUNT OF INOCULATION.—"Apropos of distempers, I am going to tell you of a thing that I am sure will make you wish yourself here. The small-pox, so general and so fatal among us, is entirely harmless here by the invention of *ingrafting*, which is the term they give it here. There is a set of old women who make it their business to perform the operation in the month of September, when the great heat is abated. People send to one another to know if any of their family has a mind to have the small-pox. They make parties for the purpose, and when they are met—commonly fifteen or sixteen together—the old woman comes with a nutshell full of the matter of the *best sort of small-pox*, and asks what vein you will please to have opened. She immediately rips open the one that you offer to her with a large needle, which gives you no more pain than a common scratch, and puts into the vein as much venom as can lie upon the head of her needle, and after binds up the little wound with a hollow bit of shell, and in this manner opens four or

five veins. The Grecians have commonly the superstition of opening one in the middle of the forehead and in each arm and on the breast, to make the sign of the cross ; but this has a very ill effect, all the wounds leaving little scars, and is not done by those that are not superstitious, who choose to have them in the legs or in that part of the arm that is concealed. The children or young patients play together all the rest of the day, and are in perfect health till the eighth ; then the fever begins to seize them, and they keep their beds two days, very seldom three. *They have very rarely above twenty or thirty in their faces, which never mark ;* and in eight days' time are as well as before their illness. Where they are wounded there remain running sores during their distemper, which I doubt not is a great relief of it. Every year thousands undergo this operation, and the French ambassador says that they take the small-pox here by way of diversion, as they take the waters in other countries.—*From "Lady Montagu and Modern Bacteriology," by Mrs. H. M. Plunkett, in The Popular Science Monthly for July.*

THE BEAUTIES OF COUNTRY LIFE.—It is often solitary, retired, to a certain degree ; but does a secluded life in the country necessarily breed a feeling of lonesomeness, irksome discontent, and a homesickness for the city ? This is a question that must interest any who contemplate a change from city to country. One will say the answer depends on the person who makes that change, and the answer has much truth. Another will say that it depends on the location of the country home, and that, too, has an important bearing. A house situated in a low, narrow valley, with no other habitation in sight, surrounded by woods and swamps, with scarce a lovely object in view, would indeed be lonely. It ought to be lonely, and it ought to breed such discontent as to drive the owner to seek a more cheerful location. I will add to these two important answers this third one : That one's lonesomeness in the country depends largely upon one's will, one's attitude toward the country. If you begin country life feeling that you are a foreigner to it, and never intend to be naturalized, then you doom yourself to dislike it. Nature will never adopt you into her larger liberties unless you will be

adopted, and the shy denizens of bush and brake will never greet you as a fellow-citizen. But if you drop this alien spirit and resolve to conquer the country life by openly surrendering to its charms, then you will win a gratifying success.—*From "Is Country Life Lonely?" by C. H. Crandall, in North American Review for July.*

THE ST. LOUIS CLINIQUE has passed into the hands of Dr. Emory Lanphear, Professor of Surgery in the College of Physicians and Surgeons. Dr. Lanphear will conduct the journal in the interests of that school and of the medical profession of the West.

DR. EMORY LANPHEAR, for many years editor of the *Kansas City Medical Index*, has resigned the chair of Operative Surgery and Clinical Surgery in the Kansas City Medical College and has removed to St. Louis. He makes the change in order to become Professor of Surgery in the St. Louis College of Physicians and Surgeons, one of the oldest and strongest medical schools of the West.

THE SANITARY SECURITY COMPANY, of New York City, is the title of a new corporation recently started, for the sanitary inspection and certification of buildings and premises. Capital, $100,000, and directors, James C. Bayles, of East Orange, N. J.; George E. Waring, Jr., of Newport, R. I.; J. H. Raymond, of Brooklyn; and Frederick Dean and Alfred R. Evans, of New York City.

DAMAGES FOR OPEN SEWER.—Dr. W. S. Lumpkin, of Atlanta, Ga., sued that city for $10,000 damages, alleging that the injurious fumes from an open sewer had ruined his health. The jury found in his favor to the amount of $400.

DR. EZRA M. HUNT, Secretary of the New Jersey State Board of Health, died July 1st, at the residence of his son, Dr. A. Clark Hunt, of Metuchen, aged sixty-four years. A biographical sketch of Dr. Hunt will be published in our next number.

SANITARY TOPOGRAPHY, CLIMATE, AND MINERAL SPRINGS OF NEW YORK in next number.

AMERICAN PUBLIC HEALTH ASSOCIATION.

SECRETARY'S OFFICE, CONCORD, N. H., June 30, 1894.

(Preliminary Circular.)

THE TWENTY-SECOND ANNUAL MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION will be held at

Montreal, Canada, September 25th–28th, 1894.

OFFICERS, 1893–94.

President, Dr. E. PERSILLIER-LACHAPELLE, Montreal, P. Q., Canada.

First Vice-President, Dr. M. CARMONA Y VALLE, Mexico, Mex.

Second Vice-President, Dr. J. N. MCCORMACK, Bowling Green, Ky.

Secretary, Dr. IRVING A. WATSON, Concord, N. H.

Treasurer, Dr. HENRY D. HOLTON, Brattleborough, Vt.

The regular sessions will be in Association Hall, Y. M. C. A. Building, Dominion Square, opposite the Hotel Windsor. The following topics have been selected for consideration at this meeting:

I. The Pollution of Water-Supplies.
II. The Disposal of Garbage and Refuse.
III. Animal Diseases and Animal Food.
IV. The Nomenclature of Diseases and Forms of Statistics.
V. Protective Inoculations in Infectious Diseases.
VI. National Health Legislation.
VII. The Cause and Prevention of Diphtheria.
VIII. Causes and Prevention of Infant Mortality.
IX. The Restriction and Prevention of Tuberculosis.
X. Car Sanitation.
XI. The Prevention of the Spread of Yellow-Fever.

Upon all of the above subjects special committees have been appointed; therefore all papers upon these topics should be presented to the appropriate committee in season

to be incorporated as a part of the report of the committee, if deemed advisable.

The Executive Committee announces the following additional subjects upon which papers are invited :

XII. On the Education of the Young in the Principles of Hygiene.
XIII. Private Destruction of Household Garbage and Refuse.
XIV. Disinfection of Dwellings after Infectious Diseases.
XV. Inspection of School Children with reference to the Eyesight.

Papers will be received on miscellaneous sanitary and hygienic subjects, but preference will be given to the topics announced above.

All persons who purpose to present papers at the next meeting of the Association will be governed by the following By-Laws of the Executive Committee :

"4. *All papers presented to the Association must be either printed, type-written, or in plain handwriting, and be in the hands of the Secretary at least twenty days prior to the annual meeting, to insure their critical examination as to their fulfilling the requirements of the Association.*

"5. If any paper is too late for critical examination, said paper may be so far passed upon by the Executive Committee as to allow its reading, but such paper shall be subject to publication or non-publication as the Executive Committee deem expedient.

"6. All papers accepted by the Association, whether read in full, by abstract, by title, or filed, shall be delivered to the Secretary as soon as thus disposed of, as the exclusive property of the Association. Any paper presented to this Association and accepted by it shall be refused publication in the transactions of the Association if it be published, in whole or in part, by permission or assent of its author in any manner, prior to the publication of the volume of transactions, unless written consent is obtained from the Publication Committee.

"7. Day papers shall be limited to twenty minutes, and evening papers to thirty minutes, each."

Invitations extended to individuals to prepare papers for

the Association do not imply their acceptance by the committee, merit alone determining that question.

The Local Committee of Arrangements has already commenced work to insure a large and profitable meeting. All communications relating to local matters should be addressed to Dr. Elzéar Pelletier, Secretary Local Committee of Arrangements, No. 76 St. Gabriel Street, Montreal, Canada. Circulars will be issued in ample time, giving information relating to transportation and hotel rates, etc.

Blank applications for membership may be had by addressing the Secretary.

EXTRACTS FROM CONSTITUTION.

The objects of this Association shall be the advancement of sanitary science, and the promotion of organizations and measures for the practical application of public hygiene.

The members of this Association shall be known as active and associate. The Executive Committee shall determine for which class a candidate shall be proposed. The *active* members shall constitute the permanent body of the Association, subject to the provisions of the constitution as to continuance in membership. They shall be selected with special reference to their acknowledged interest in or devotion to sanitary studies and allied sciences, and to the practical application of the same. The *associate* members shall be elected with special reference to their general interest only in sanitary science, and shall have all the privileges and publications of the Association, but shall not be entitled to vote. All members shall be elected as follows :

Each candidate for admission shall first be proposed to the Executive Committee in writing (which may be done at any time), with a statement of the business or profession and special qualifications of the person so proposed. On recommendation of a majority of the committee, and on receiving a vote of two thirds of the members present at a regular meeting, the candidate shall be declared duly elected a member of the Association. The annual fee of membership in either class shall be five dollars.

IRVING A. WATSON, *Secretary*,
CONCORD, N. H.

EZRA M. HUNT.

THE SANITARIAN.

SEPTEMBER, 1894.

NUMBER 298.

PROCEEDINGS OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION—ELEVENTH ANNUAL MEETING.*

THIRD DAY, MAY 31ST, 1894.

DR. ROLAND S. CURTIN in the chair.

"The Condition of the Heart in Diabetes, and its Relation to Diabetic Coma," by Dr. Leonard Weber, of New York, was the first paper read. It was based upon sixty cases in his practice. They were diabetes mellitus. The majority of the patients were over forty-five, and the majority of them were women. He reported two cases in children—one in a child aged twelve, due to scarlatina; child died in three months.

Of forty cases in advanced life there was not a recovery. The duration of the disease was from three to twenty years. In a number of cases it averaged ten years. At time of the meeting he had nine cases under observation.

The causes of death were many—pulmonary complications in some, nephritic among others. Nephritis was an important factor. Half the cases died of sub-acute coma.

Glycosuria in connection with renal troubles complicated the cases. In such the state or condition of the heart must be watched carefully. To repeat, half died of diabetic coma, the coma in every case being fatal—cases where the heart is weary and overworked, cases often associated with arterial sclerosis. The acetone odor was noticeable in the breath of the patients, very marked in some cases. First, syncope followed by speedy cardiac failure. Heart disease is not so rare in these cases. He cited the case of a lady aged seventy-three,

* Continued from page 105.

recently dead. She had had the disease for thirteen years. Three years ago the disease showed itself in weakness of the pulse; it fell, varying from 24 to 30—perfect bradycardia. Death was easy and painless. Her husband, a broker, aged seventy-two, developed the disease. He lived two years.

Diabetes may be a cause of neuro-muscular disease, fatty degeneration of the heart, etc. No doubt, in a measure, the poisonous action of the ptomaines has an important influence.

Cases associated with gastro-intestinal symptoms. Marked dyspepsia, again associated with chronic interstitial nephritis. To repeat, the heart must be watched—diabetic heart. The diet in such cases requires careful study. Ptomaines and their intoxications must be avoided.

The cause leading to diabetes in the majority of cases is chronic. The very careful observations of Dr. Worms indicate that none of the present theories regarding the disease are verified by cases observed in practice.

Dr. Weber's own observations, based upon years of close study, are confirmatory of Dr. Worms's conclusions.

The disease is protean. Every case must be made a special study. Often cases are associated with heart and brain complications, locomotor ataxia, etc. Diabetes frequently is a disease of the whole system.

Reduce the glycosuria as much as possible. Such cases are prone to gastro-intestinal dyspepsia, due to the ingestion of nitrogenized substances.

Dr. Stephen Mackenzie, of Guy's Hospital, London, reports eighty cases. Forty-five of them died suddenly. In the profession there is an increasing opposition to an exclusive meat diet. Adapt the therapeutic requirements to individual cases. Study all cases or their individual indications.

There are no secret remedies in the treatment. Obtain from the patient a minute history of the case; get also his or her life history. There are no cast-iron rules for treatment; no absolute meat diet.

He employs rest and massage; he tries to get rid of the sugar by the usual alkaline treatment. If soda solutions do not agree he gives opium in some cases, and watches its effect on the heart and stomach. Thinks highly of the Schott treatment.

In cases of diabetic coma it is most important to evacuate the bowels and fill the lower colon with alkaline water. The coma he deems fatal. So far he has had no recoveries.

The next paper was "Report of Cases of Chronic Heart Disease treated after the Schott Method by Baths and Gymnastics," by Robert, H. Babcock, M.D., of Chicago.—The baths are cool, saline, and carbonated ones, owing their efficacy to chlorides of sodium and calcium, and ranging in temperature from 92° F. in the beginning of the course to 87° F. later on, when patients can endure so low a temperature. At first a bath lasts but five or eight minutes, and as the course proceeds finally reaches a duration of twenty minutes. But one is given daily, and this is omitted altogether every fourth day. Each treatment is followed by an hour's rest in bed, the patient being covered up warmly and permitted to sleep if so inclined. Such a balneological course lasts about seven weeks, and then may be repeated after an interval of a month or so if advisable. These baths exercise a powerful influence on the heart, and therefore have to be ordered in strength, temperature, and duration to suit the indications of each case.

The author next proceeded to explain the effect of cool, saline baths on the heart and blood-vessels. By reference to conclusions of Schüler and Leichtenstern, and by two sphygmographic tracings, the one taken just before and the other during a bath, he deduced the conclusion that these baths act on the heart similarly to digitalis. On the blood-vessels, however, he thought their action was that of a vasomotor dilator rather than constrictor, as was always taught of digitalis. At all events, whatever be their mode of action, they slow and strengthen the pulse, render it more regular when it is irregular, cause demonstrable diminution in the size of a dilated heart, and improve the character of the sounds if these are weak or impure. In short, this form of balneological treatment brings about manifest improvement in the heart and circulation when such improvement is a physical possibility.

The light exercises of the trunk and extremities, that form a valuable part of this Schott method of cardiac therapeutics, exert the same kind although not the same degree of effect as the baths; and Dr. Schott is reported to have known them

to ameliorate the attacks of angina pectoris both in severity and frequency. The peculiarity of these gymnastics lies in the fact that an attendant applies gentle resistance to the movements made by the patient.

Since November 1st, 1893, Dr. Babcock has subjected nineteen patients to this form of treatment, with results which he embodied in his paper. The cases were taken as they presented themselves, and were not selected. They were chiefly organic, some of valvular lesions due to chronic endocarditis, others of dilatation secondary to vascular and renal changes. Thirteen of his cases received a full course of treatment, and of this number nearly all experienced more or less benefit. Improvement was generally noticed first in relief of dyspnœa and of cardiac pain and discomfort.

Three cases were reported *in extenso*: one, a case of cardiac dilatation with relative insufficiency of the mitral valves, and secondary probably to moderate arterio-sclerosis and overstrain. Another was a case of mitral regurgitation in a twelve-year-old girl; and the third was a mitral stenosis in a young woman. Sphygmographic tracings were exhibited to illustrate the truly remarkable effects obtained. No medicines were administered except occasionally a mild laxative or some other simple remedy to meet a particular indication of transient disturbance.

In conclusion the author mentioned pronounced degeneration of the cardiac muscle or vascular system, as aneurisms and great arterio-sclerosis, as conditions contraindicating this form of treatment. Chronic interstitial nephritis was not, he thought, a contraindication to the employment of even such cool saline baths; and two urine analyses were appended which showed that one patient having this form of renal disease was benefited rather than injured.

Discussion followed, opened by Dr. Roland G. Curtin. He referred to cases in the Philadelphia Hospital, where there was temporary saccharine urine associated with fever—a temporary diabetes. It was not a serious symptom, and disappeared.

Dr. Glentworth R. Butler, of Brooklyn, said that the disease known as diabetes was also a symptom of some underlying condition. It may be caused by some lesion of the liver or pancreas; it may be produced by one of the many

processes of metabolism. Glycosuria is a symptom. There is weak heart in such cases; there is general muscular weakness in that disease, and the heart participates; there is degeneration of the muscular fibre of the heart. Cited a case in his practice, a physician aged fifty-five. There was a small percentage of sugar, one tenth of 1 per cent. The coma came on in his case without any warning. Two months ago he had an attack of syncope, a case of dilated heart. Under treatment the heart improved, except an attack of syncope of very brief duration, brought on by over-exertion. Regarding diet, is not a firm believer in any fixed diet scale. The patient's condition generally is impaired. Thinks it a mistake to cut off all the carbo-hydrates and saccharine substances at once: graduate it. He cited the case of a pregnant woman. Got lactose in the urine, due to a peculiar irritation of the nervous system. She improved under treatment. Dr. Babcock's paper was a valuable illustration of physiological treatment on therapeutic lines. Baths and exercise were natural methods of treatment. It was important to give strict attention to details, the adjustment of the means used to the varying conditions of the patient.

Dr. Charles E. Quimby, of New York, deemed Dr. Babcock's paper a valuable and timely contribution. He said that there was a defect in all our methods to-day in treating cardiac disease. Digitalis was a whip to the heart; digitalis was a stimulant. Arterial tension must be present if we are to have good circulation. In aortic regurgitation there is a slowing in the circulation. The indications in the treatment of valvular lesions are to hasten circulation and keep up the nutrition of the body.

Dr. Leonard Weber expressed his gratification with the valuable information elicited.

Dr. Robert H. Babcock closed the discussion. Part of his results were published last fall in the *Journal of the American Medical Association*, and to avoid repetition he had not embodied them in his paper.

The next paper was entitled "A New and Distinguishing Sign of Latent Aneurism of the Aorta," by Dr. W. C. Glasgow, of St. Louis, Mo. In a prefatory statement he said that in the majority of cases of aneurism, early in their history

there was an absence of dulness on percussion ; that it was later that we get the physical signs of pressure, etc.—the signs that give a suspicion of the disease. He described his new sign in thoracic aneurism. It is the presence of a systolic bruit in the brachial artery synchronous with the systole of the heart. It was practised by having the patient extend the arm at a right angle to the body, placing the ear over the brachial artery ; there he gets a vibration of the artery, or a bruit, called by him a new sign of aortic aneurism. He finds no mention of such a sound in the older French, German, and English classics. He reported five cases in his practice in which the sign was present.

To illustrate the matter, a case in the clinic of Dr. Murray, of Washington, was brought before the meeting. Dr. Murray was introduced. He said that the man (a mulatto) was a "suspect." He had had four or five such during the last year. He gave a history of the case : Pulses irregular : pain left side ; pain wrist to shoulder ; on the right side there was an area of dulness ; no murmur ; heart apparently not enlarged. He had suspected aneurism. Dr. Glasgow called on him. He searched for Dr. Glasgow's pathognomonic symptom, and found the brachial systole—murmur or sound.

A number of members of the Association got the sound in the patient's left arm.

A discussion followed. Dr. Roland G. Curtin said that he had been working in the same direction to discover how to distinguish aneurism earlier. He considered digitalis a dangerous agent : it increases the force of the heart and increases the aneurism, as a direct result. He had been experimenting with the effects of pressure.

Dr. Robert H. Babcock asked Dr. Glasgow whether a systolic tone is not sometimes heard in arterial sclerosis, also the ages of the five patients, and if he had got the sound in any case ending in a post-mortem.

Dr. Glasgow replied that their ages were various : one, thirty-five ; one, forty-eight ; cough ; no signs of aneurism ; one aged sixty ; latter aneurism of the abdominal artery. No autopsy in any of the cases, as they were collected within a year. All alive except one case. He could not answer the question as to arterial sclerosis.

Dr. Murray, of Washington, deemed the sign very valuable and useful to the profession if further experience verified the few cases cited. He does not believe in digitalis in the treatment of aneurism.

Dr. J. B. Walker, of Philadelphia, thanked Dr. Glasgow for bringing the case before them. He had noticed musical murmurs in the post-tibial. He had not associated them with aneurism.

Dr. Glasgow closed the discussion. He believes the sign to be valuable, constant, and reliable.

"Musical Nomenclature in Physical Diagnosis" was the subject of a paper by Dr. J. Hilyard Tyndall, of New York, but owing to the absence of the writer, it was only read by title.

"Ozone in Phthisis, with Special Reference to the Pneumatic Cabinet" was the subject of a paper by Dr. Charles E. Quimby, of New York.

He reviewed the medical history of phthisis, referred to medical agents, said that the continued use of creosote may be due to a lingering belief that it acts as a germicide. Tubercle bacilli were dealt with.

Since he had made a systematic study of the disease he wished to attack it through the systemic forces. He referred to recurrent tubercular and septic infection, said that for a year past his remedial agents were three in treating phthisis —alcohol, creosote, and oil of cloves.

He gave a brief description of an apparatus devised by him that seemed to fill all requirements. His plans for its construction were available to any one interested in the matter.

He dwelt at length on the powerful oxydizing properties of ozone. He described it as a stimulant.

Reviewing the pathology of phthisis, he remarked that a large number of the cases were adynamic in character. Koch recognized this fact, said that there was a degeneration and necrotic activity. He used ozone and the cabinet, even in the third stage of the disease.

He reported a number of cases benefited by the treatment. He makes no claim that they are cured; the changes noted are due to local stimulation. Ozone is a powerful stimulant to the mucous membrane. It is a pulmonary antiseptic, an

agent of known value. He does not know of any remedy that will destroy tubercle bacilli in the tissues. The effect of ozone on tubercle bacilli in sputa is *nil;* ozone produces a prompt reduction in temperature ; it gives a result equivalent to climatic influences.

The value of an ozonized atmosphere in phthisis was marked. Certain patients cannot take iron ; after the ozone treatment they take and assimilate it without any headache or disturbing influence.

After the cabinet treatment the area of respiration is restored in some cases. He says ozone seems to meet the demands of the system. Calls it a respiratory food. It can be generated freely in any house.

A discussion followed. Dr. Van Ruck, of Asheville, N. C., had used inhalations of oxygen and ozone. He deemed the method of deep inspiration an important factor in such cases. Inhalations were very valuable. He classed ozone as a stimulant.

Dr. Guy Hinsdale, of Philadelphia, and Dr. Isaac Hull Platt, of Lakewood, spoke of the ozone in the atmosphere.

Dr. Charles E. Quimby closed the discussion. He said that ozone and all its associated effects could be had in cities, where the masses are engaged in business and cannot afford to get away. Therein it meets the indications in their cases.

(*To be continued.*)

NEGRO COFFEE.

NEGRO or wild coffee is the name that has been given to fedegozo seeds, on account of their being used in western tropical Africa and in some of the West India Islands by the natives as a substitute for coffee. In some of the French African colonies the seeds are also known as *café nègre* and *café marron.* Botanically, the plant producing the seed is known as *Cassia occidentalis.* It grows very freely in most tropical countries ; in fact, it is a common weed, with a sickly, offensive smell, that many planters would fain be rid of. The seeds are roasted and ground, and the infusion, made in the

same way as ordinary coffee, amazingly resembles the finest Mocha. This fact is confirmed by Dr. Nicholls, of Dominica, who, writing to the director of the Royal Botanic Gardens, Kew, a few years back, states : " I collected some seeds, and directed my cook to roast and grind them, so that I might taste the 'coffee.' Other matters engaging my attention, I forgot the circumstance until several days afterward, when, one evening, my wife inquired how I liked my after-dinner cup of coffee. I turned to her inquiringly, when she laughingly said : 'That is your wild coffee.' I was indeed surprised, for the coffee was indistinguishable from that made of the best Arabian beans, and we in Dominica are celebrated for our good coffee. Afterward, some of the seeds, roasted and ground, were brought to me, and the aroma was equal to that of the coffee ordinarily used in the island."

Dr. Livingstone took some of these seeds to the Mauritius Botanical Gardens, and mentioned that the natives of tropical Africa roasted and used them like coffee.

It has not been definitely stated that the infusion has any stimulating effect, but it is only fair to suppose it has, otherwise the negroes would hardly employ it in lieu of coffee. Chemical analysis shows it to consist of fatty matters (olein and margarine), 4.9 ; tannic acid, 0.9 ; sugar, 2.1 ; gum, 28.8 ; starch, 2.0 ; cellulose, 34.0 ; water, 7.0 ; calcium sulphate, and phosphate, chrysophanic acid, 0.9 ; malic acid, sodium chloride, magnesium sulphate, iron, silica, together, 5.4 ; and achrosine, 13.58 parts in one hundred. Achrosine is soluble in water, and communicates to the latter a garnet color. It contains carbon, hydrogen, oxygen, nitrogen, and sulphur ; but its exact composition has not been determined. It is soluble also in alcohol and in acids and alkalies. The color cannot be fixed upon tissues by any known mordant, and it is this circumstance that induced Professor Clouet, who made the analysis, to term it achrosine, or " not coloring," although being colored itself.

If we might venture an hypothesis, we would suggest that further investigation into this coloring matter may prove that the color is the important feature from an alimentary point of view. This has recently been proved to be the case with kola. For many years scientists were puzzled as to the nature

of the substance in the kola nut that produced the stimulating and nutritive effect. It was at first suggested that it was due to caffeine; but experiments proved that this was not the case. At length, after prolonged researches, Professor Heckel, of Marseilles, practically demonstrated that the "muscle-bracing" and other beneficial properties of the kola nut were entirely due to the presence of a coloring body which he designated kola red (*rouge de kola*), and which a German scientist has since name kolanin.

Besides using fedegozo seeds as a substitute for coffee, the natives employ the whole plant as a remedial agent in various complaints and diseases. It is closely allied to ordinary senna —in fact, in Liberia, on the west coast of Africa, it is called small senna—so readers will not be surprised to learn that the whole plant is purgative. This is mainly attributable to the mucilaginous and extractive matters in conjunction with the small percentage of chrysophanic acid that analysis proves to be present in the plant. Torrefaction destroys the purgative principle in the seeds and causes them to taste like coffee.

One of the most useful properties of the plant is its febrifuge action. It is generally administered by boiling an ounce of the seed in ten ounces of water; and when this quantity is reduced to nine ounces, it is given to the patient during the cold period of a rigor; a profuse perspiration follows, and the rigors do not recur. The seeds have repeatedly been employed in France and in some West India Islands for this purpose; and instead of the decoction being used as just described, sixty grammes of the seed have been macerated in a litre of Malaga wine.

The value of the plant is recognized in all parts of the world. Mohammedan writers recommend its use in cases of coughs, especially whooping-coughs; an infusion of the root is considered by the American Indians to be an antidote against various poisons; and in Brazil the same preparation is used as a tonic and diuretic in dropsy and liver complaints. This latter property has gained for the plant the same unconventional title that country children apply to our own dandelion.—*Chambers's Journal.*

A SKETCH OF THE NATURAL HISTORY OF MINERAL WATERS.

By Frederic Maurin.

WHAT are mineral waters?

"By their very character," says Mr. Kellar, "mineral waters yield to a rigorous methodic classification with great difficulty. They are complex compounds, or rather, mixtures of a very variable composition. They contain very many substances in solution, as they necessarily comprehend, in greater or less proportion, all the soluble elements of the regions through which they circulate or which they traverse before gushing from the surface of the soil. The multiplicity of these elements, the chemical analysis of which does not always certainly reveal their mode of combination, renders the rational classification of mineral waters very difficult and very complicated, and the necessity of keeping account of their action upon the animal economy, of their medical rôle, which often seems due to the presence of certain substances, found there in very small quantities, tends still more to increase the difficulty."

There is no reason, then, for being astonished that hydrologists have not succeeded in agreeing upon the adoption of a classification, still less, when we shall see how inefficiently the product itself, which should be the object of classification, is still defined. Thus, from Mr. Herpin (of Metz), mineral waters are "all waters which by the nature or the proportion of their principles, or by their therapeutic action, differ from drinkable waters." Mr. Ossian Henry, Sr., calls mineral waters "those waters which, coming from the bosom of the earth at variable depths, bring with them substances, which may have, upon the animal economy, a medicinal influence capable of giving rise to effects, often very salutary in the diverse diseases affecting our humanity." Messrs. Petrequin and Socquet give the name of natural mineral waters "to certain springs which, in their subterranean course, be-

come charged with different saline, gaseous, and even organic substances, the nature or the proportion of which makes them generally more or less improper for domestic use, but communicates to them peculiar properties, precious to the art of curing; it is that which formerly brought to them the qualifications of medicinal waters (*aqua medicatæ*)." From Mr. Durand-Fardel we must understand, in medicine, by mineral waters, "the natural waters which are employed in therapeutics, because of their chemical constitution, or of their temperature."

"It is to geology," adds Mr. Jeramec, the brilliant reporter of the Exposition of 1889, "that the study of the origin of mineral springs belongs."

This telluric origin of mineral waters, brought forth in antiquity by Vitrurius, is also, according to Mr. Gautier, adopted by Bernard Palissy, who says that "rains support the springs," and resents the opinion "that they are fed by the ocean." Besides, each of these theses suffices to explain the origin of the two groups of springs, if we admit, for the first, that the initial ascending force is great enough to permit of long inclined courses, where cooling and deposits may occur; and, for the second, that they penetrate to very great depths. Whether we adopt one or the other, or whether we consider them both necessary, it is natural, in all cases, to seek the relation between the springs and the regions from which they emerge.

According to Mr. Garrigou, the geological distribution should be the following: warm sulphurous waters are found in the oldest rocks (granite); bicarbonated and very gaseous waters in the vicinity or in the midst of volcanic rocks. Ferruginous waters should have as their origin the strata of transition. Simple saline waters should be spread out in the secondary strata or at their limits.

Almost all mineral springs, whether cold, temperate, or thermal, contain free, or in solution, such gases as nitrogen, oxygen, carbon dioxide, sulphuretted hydrogen, and, sometimes, hydrocarbons. Those are the gases in solution whose composition and quantity always have direct relations with the constitution of the soil, and the nature and warmth of the waters, which are loaded with them.

Independently of these gases, a very great number of mineral waters carry with them, by their ascending movement, quantities, often considerable, of these gaseous elements which come, in the form of more or less voluminous bubbles, to be dispersed in space ; these are spontaneous gases, a part of which, without doubt in the state of solution when the waters still occupy the depths of the soil, tends to be eliminated as the pressure diminishes.

The gases of mineral springs, at least nitrogen and oxygen, spring from the atmosphere, which, in penetrating into the soil, gives birth, by reacting upon the bodies it meets on its way, to gaseous products, new, and, in all cases, very different from air, properly considered.

According to Mr. Saigey, the air should come from the earth by expiration, and should re-enter by absorption, which would produce a perpetual flow and reflow, or, better, an incessant mixture of free atmosphere with the atmosphere within the earth.

It is sufficient, indeed, to study the nature of the gases which circulate in the interior of the soil, and the gases which are dissolved or set at liberty by the mineral springs, in order to see at once that the surrounding air is, if not the unique, at least the natural reservoir of subterranean gases, only, however, in what concerns nitrogen and oxygen.

Nitrogen is found almost always free or in solution in mineral waters, because its inert properties do not permit, like oxygen, of its undergoing transformations or combinations during its passage through the mineral, and even the organic compounds of the soil ; on the other hand, it is the dominating principle of the air ; besides, certain springs evolve it in a relatively considerable proportion.

Yet it must be admitted that for several years a certain physiological action has been attributed to the nitrogen of mineral waters. Some authors even make it a characteristic, in those waters which contain a large proportion of it (98 per cent). Remarked long ago by Anglada in the sulphurous waters of the Pyrenees, the presence of nitrogen has more recently been revealed in many mineral waters by the analyses of Lheritier and Lefort especially. The Spanish hydrologues have even gone further : considering nitrogen as the medic-

inal agent of certain waters, they have founded a new class, the class of nitrogenous waters.

Contrary to nitrogen, oxygen is always less abundant in the waters and in their gaseous products than in the air, because it is constantly in contact with substances which it metamorphoses, in a word, with mineral and organic matters, which absorb it wholly, or in part, as it penetrates deeper into the soil.

But how can we explain the presence of these large quantities of carbon dioxide, and sometimes of sulphuretted hydrogen and carbonetted hydrogen, if we do not recognize another origin than the surrounding air? "There takes place," as Rosefort has said in his studies upon the gases of mineral waters, "without doubt, in the bosom of the earth, either by the action of the plutonic activity remaining or by incessant chemical reactions between the different mineral elements placed in contact by the water, as a vapor or a liquid, decompositions, the results of which are shown by the formation of new solid mineral compounds, which the waters dissolve, and by the gaseous products, which the springs throw out into the air.

Carbon dioxide is one of the most constant elements of mineral waters; there are hardly five or six springs known in France which are wholly without it. Its proportion is extremely variable; scarcely appreciable in sodic sulphurous waters, which always contain it in the state of a neutral carbonate, it is more abundant in calcic sulphurous waters, where it exists mixed with sulphuretted hydrogen, and in combination with the alkaline and earthy bases. Mr. Jules François has observed that, among the bicarbonated waters, the abundance of carbon dioxide evolved was, generally, greater, as the eruptive (plutonic or volcanic) rocks, congeners of these waters, that is, as regards vicinity, were more recent.

Carbon dioxide forms the base of a large class of mineral waters designated under the name of acidulous waters, of acidulous bicarbonated waters, or simply bicarbonated waters. It is to its presence that some slightly soluble mineral matters may be carried to the surface in perfect solution, as the carbonate of lime, of magnesia, of iron, of manganese, and of strontium. The evolution of carbon dioxide yields to the in-

fluence of the atmosphere. It has been observed that when thunderstorms are near the bubbling of the water is more tumultuous ; that is explained naturally by the diminution of the atmospheric pressure, which then permits the subterranean gases to escape more easily.

Mineral waters are endowed with an excessive sensibility, and many causes contribute to their variation or to their alteration.

A work by Professor Wilm furnishes precise indications upon the constancy and the varieties of the composition, and of the mineralization of the springs, which can be arranged in two orders :

1. Periodic variations, dependent upon the mineral waters having undergone more or less mixture with superficial sheets of water. This cause of variation, once found, can almost always be lessened, if not destroyed, by well-conducted works of captage.

2. Progressive or secular variation, dependent upon the rocks, which are washed by the hydromineral current, constantly changing their composition by yielding their substance to the water ; which change of composition can, after a certain time, probably very long, bring about the diminution, even the disappearance, of certain substances. This kind of variation has already been affirmed for many important mineral springs by Lecocq and other geologists, but the arguments appealed to, to admit these changes, as they could not be obtained directly, were obtained indirectly, by starting, not from the composition of the water itself (which could not be had), but from that of the deposits left by the water during its passage through the conduits.

Besides, mineral waters undergo alterations by the action of light and solar rays. Mr. J. Lefort says on this subject : " All hydrologists know that mineral waters, when they are exposed to contact with air, suffer modifications or alterations, which have a cause exclusively chemical, or both mechanical and chemical. As, for instance, from the fact of the diminution of pressure which they bear as they arrive at the surface of the soil, certain ones among them, bicarbonated waters among others, have a tendency to lose carbon dioxide. Some salts, no longer protected by this great excess of gases,

which existed in the mineral water in the state of oversaturation, and being by nature very easily altered, absorb one of the elements of the air (oxygen) and become completely modified. It is already understood that we are speaking of the bicarbonate of the protoxide of iron, which is converted into carbon dioxide on the one side, and ferric hydroxide on the other. Thus it is to a cause, first mechanical and then chemical, that we can attribute the mode of spontaneous decomposition of ferruginous bicarbonated mineral waters. On the contrary, the modifications which the oxygen of the air makes sulphurous mineral waters undergo are only chemical, because the sulphurous principle is still more easily altered than the ferruginous principle of the bicarbonated waters, and because the nitrogen or the small quantity of carbon dioxide which they contain is powerless to preserve them from the oxidizing action of the surrounding atmosphere.

" Up to this time we have reasoned upon the hypothesis that the air alone reacts upon mineral waters without the intervention of any physical agent. But you may ask if, under the complete influence of oxygen, of light, and of the sun these very mineral waters do not undergo, upon contact with the air, alterations, either more prompt or more profound ?

" Although no experiment up to this time permits of the solution of this question in one sense or another, yet it is presumable that a high surrounding temperature, produced by solar rays, causes more prompt and, perhaps, more profound changes in the constitution of mineral waters than when they are, on the contrary, screened from a high surrounding atmosphere.

" But if, instead of being exposed to direct contact with the atmosphere, they are kept in carefully corked vessels, and if they are left for a time to the action of the light and solar rays, do these same waters undergo modifications or alterations in their chemical composition ?

" In this respect mineral waters can be divided into two groups including, the first, the bicarbonated and the sodic sulphurous waters, and the second, the calcic sulphurous waters."

Experimenting upon the sodic sulphurous waters, Mr. Lefort has observed that they undergo no appreciable decom-

position, or only slightly important alterations from the light and solar rays. As to the calcic sulphurous waters, they gradually lose their sulphurous principle, until the essential element, which served at their origin to characterize them, can no longer be recognized.

" We can say, then," concludes Mr. Lefort, " without fear of being mistaken, that the waters which are the richest in sulphur are generally those which keep the best, for the volume of air which is imprisoned in the bottle is almost the same, whatever may be the quality of the water; and we admit that, when the dose of sulphur held in solution is very weak, the liquid would be completely without sulphur in a very short time. If, on the contrary, the dose of sulphur is strong, the air could destroy but a very small fraction, and the water exported will still keep a rather large amount. Whenever a very sulphurous water may have a slightly elevated temperature (which is rather rare), it will keep a long time, even in contact with the free air."

Translated from the French by MAURICE OSTHEIMER, A.B. (Harvard).

WYNCOTE, PA., July 20, 1894.

JENNER'S ANTECESSOR.—His name is not known; but as Jenner's centennial approaches it was to be expected that some one would discover that somebody else had discovered vaccination long before Hunter's pupil inoculated James Phipps with the cow-pox in 1796. At a recent meeting of the Epidemiological Society of London, Dr. Pringle called attention to the following passage in an ancient Hindu work as evidence that vaccination was practised in India centuries before the birth of Edward Jenner: " The small-pox produced from the udder of the cow will be of the same mild nature as the original disease; the pock shall be of good color, filled with clear liquid, and surrounded by a circle of red. There will be slight fever for one, two, or three days, and no fear need afterward be entertained of small-pox so long as life endures."

SANITARY TOPOGRAPHY, CLIMATE, AND MINERAL SPRINGS OF NEW YORK.

By A. N. Bell, A.M., M.D.

The State of New York, including its share of the great lakes, comprises an area of 47,000 square miles; and exclusive of the lakes, 45,658 square miles. Aside from Long Island, the State is nearly triangular in shape, but with exceedingly irregular outlines. It extends from the parallel of 40° 29′ 40″ to 45° 0′ 42″ north latitude, and lies between the meridians of 71° 51′ and 79° 45′ 54″ west longitude from Greenwich. Its greatest length from north to south is 311¾ miles, and its greatest breadth from east to west, including Long Island, is 412 miles. The surface is greatly diversified. It has some extensive plains, much gently rolling land, numerous chains of hills and mountains, and many beautiful valleys, rivers, and lakes.

Topographically, for convenience of description, the State is divisible into four distinct sections of unequal size. Long Island, the extreme southeastern section, lying between the Atlantic Ocean and Long Island Sound, and the East, North, and South sections, divided by the deep depressions of Lakes Champlain and George and the Hudson River, and by the narrow valley at right angles with these, through which the Mohawk flows, and which furnishes the natural route of the Erie Canal.

Long Island extends from the Narrows, its boundary at the west end (latitude, 40° 37′ north; longitude, 74° 02′ west), to Montauk Point (latitude, 41° 04′ north; longitude, 71° 51′ west)—118½ statute miles. Its greatest breadth is 23 statute miles. While lying between the Atlantic Ocean on the south and Long Island Sound on the north, there are numerous coves and small bays intervening on both sides, in several places leaving less than half of its greatest breadth between. Its least breadth from shore to shore is but 12 miles, near the head of Peconic Bay. In shape the island bears a striking

resemblance to a fish, with its head immediately opposite New York City. A ridge of hills, beginning with the site of Fort Hamilton at the Narrows, comprising Bay Ridge, Brooklyn Heights, and continuously other hills of various altitude, extends all the way along the north side to Montauk. This ridge is commonly called the "backbone" of the island. The hills are almost wholly covered with luxuriant vegetation, or fruitful crops seasonally, as are also the valleys between. The highest of them, Hempstead Harbor Hill, at Roslyn, is 384 feet above sea level. Two or three others are nearly as high, and the terminal one at Montauk is 194 feet above the ocean. From the centre of this ridge—varying in distance from 100 rods or so to 3 or 4 miles from the north shore—the surface descends southward, about 20 feet to the mile on the whole, but with some remarkable peculiarities. There are numerous narrow depressions, all taking their rise in the hills and extending southward, appearing very much like the dry beds of once flowing streams. With rare exceptions they are never flooded, because the porosity of the soil is such as to rapidly take up all the rainfall. These depressions become more and more shallow and broader as they descend, until they are finally lost within a mile or two of the south shore, in the general expanse of an almost level plain. Along the margins of these otherwise dry beds, and at many places in the sandy plain where all traces of them are lost, there are outbreaks of water—not springs—from the surcharged subsoil; but from these outbreaks rise many beautiful rills, some of which swell into brooks of considerable size, all running toward the ocean.

Equally remarkable is the number of basin-like dales scattered here and there all over the island. Many of them hold water all the year round, and some of these are pretty lakelets, of a mile square or more. These ponds, as they are commonly called, have no outlets except the overflow into the sandy soil by which they are bound, and over which they never flow. The depth of some of them extends to the full depth of the level of soil saturation, and these consequently are never empty. The water they contain, the same as that which breaks out in many places on the plain, is remarkable for its purity.

The structure of Long Island is boulder and boulder drift ground to gravel and sand by waves of the ocean during the period of coast subsidence.

In the experimental and subsequent progress of the work for procuring the water supply of Garden City, twelve to fifteen years ago, there was not a single particle of decayed or decaying organic matter of any kind discovered in the soil. Garden City is situated at an elevation of 103 feet above sea level, about midway between the shores of the Atlantic Ocean and Long Island Sound, 20 miles eastward from Brooklyn. The soil was found to be in layers, the beds having a dip southward. The depth of the subsoil at that place was 70 feet, but from experiments round about it is supposed to be much greater in some places. By boring through the gravels and sand at the depth of 70 feet, a dense crust of "hard pan" was encountered. Six miles nearer the ocean the depth of sand and gravel was found to be 68 feet, resting upon a bed of blue clay. This underlying layer of hard pan, or blue clay, beginning in the hills, extends not only quite to the south shore, but doubtless at some distance under the ocean beach beyond. Wells sunk sufficiently deep into this soil are of exceptional purity and inexhaustible.

The well at Garden City is 50 feet in diameter, the surface of the water in it is 25 feet below the general level of the plain at the place where it is located—in one of the river-bed-like depressions above described—14 feet below the general surface, so that the depth of the well to the surface of the water is only 11 feet. The depth of the water is 20 feet, and rises from the bottom. No water gets in through the sides of the well, because they are thoroughly impervious. The enormous volume and pressure of the water into which it is sunk will be appreciated from the fact, that while it was in process of construction four wrecking pumps, discharging through pipes 10 inches in diameter, were worked continuously day and night for a whole week, in order to keep the water sufficiently low to proceed with the wall. The water from this well is distributed by means of a Holly pump, adequate to the discharge of 3,000,000 gallons daily, and the supply is abundant.

At East Rockaway there is another well, similar to the one

at Garden City, only about 10 feet above the tide level of the salt creek and marsh 20 rods distant, which, by means of a pump and pipe, supplies water to Long Beach. It is sunk from the surface level to the depth of 20 feet only, and is 38 feet in diameter. The average daily delivery is 200,000 gallons ; 500,000 gallons could be supplied if necessary without any danger of exhaustion. The depth of water in it has never been known to be less than 6 feet.

From the fact that the level of soil saturation, as discovered at Garden City, in the central portion of the island, is many feet above tide water, there occurs a ceaseless flow of the subsoil water from the "backbone" toward the sea-shore ; not in the form of a subterranean stream or river, but in entire mass filtering through gravel and sand—slow, indeed, but persistent—found by actual observations over a wide area to move at the rate of from 8 to 12 feet to the mile.

The annual average rainfall over Long Island is 43 inches. It has been estimated that three fourths of this sinks into the soil. The surface waste is very small; indeed, there is scarcely any, except in winter when and where the ground is frozen. It is certain, therefore, that the entire volume of the rainfall, excepting this small waste in the winter time and that which is lifted by evaporation or absorbed by vegetation, is *carried* by the soil.

Forty-three inches of rainfall is more than $3\frac{1}{2}$ cubic feet upon a square foot of surface. For convenience of calculation, let us assume that 3 feet sinks into the soil. This would give more than 83,000,000 of cubic feet to the square mile, or 2,500,000 tons. A freight car will carry 10 tons. Two hundred and fifty thousand cars, therefore, would be required to convey the rainfall upon 1 square mile in a year.

The whole surface area is about 2000 square miles. One half of this area, at least, would fall within the conditions above described. It is quite safe, therefore, to estimate the size of this reservoir to be 1000 square miles, with an average depth of 50 feet. *This* is Brooklyn's storage reservoir—the primary source of her water supply. The "ponds" are intermediary, mere convenient receptacles.

While the waste of streams is enormous, it is nevertheless easy to appreciate from a knowledge of the conditions of the

soil and the examples cited of the wells sunk into it, the inexhaustible adequacy of Long Island to supply water sufficient to meet the demands of Brooklyn for all time, and the folly of those who would in the face of such knowledge seek it elsewhere.

Forty years and more ago, before the ponds that have been described were utilized as catch basins for Brooklyn's water supply, many of them were surrounded with luxuriant vegetation ; and about some of them there was a good deal of vegetable decay. The result of these conditions, taken but little notice of at the time, was the prevalence of intermittent-fever among the people who lived in their vicinity. But their use for the purpose indicated required not only the clearing away of the rubbish from their margins, but the conversion of a considerable number of them into stone-lined reservoirs ; and the process is still going on. Meanwhile, the progress of sanitary knowledge led to an act of the legislature, about fifteen years ago, requiring the drainage of a number of smaller ponds, in the western end of the island particularly, not adapted to use for the water supply, with the result of getting rid of intermittent-fever in that section ; but there are still a considerable number of stagnant ponds and some foul streams in other parts of the island, to the evil consequences of which the people who tolerate them are apparently blind, and of which the "health" officers take no notice.

Taken altogether, however, the healthfulness of the island has greatly improved during recent years, and the population outside of Brooklyn has nearly doubled within the last ten years. The south side particularly, beginning at Coney Island, only thirty minutes to an hour and a half distant by rail or steamboat from New York, Brooklyn, and Jersey City, is probably the most popular surf-bathing resort in the world ; and from this place, all the way along to Montauk, hotels and bathing establishments of unexcelled equipment ; cottages, villas and mansions, and many new villages attest the attractiveness of this ocean shore.

The climate of Long Island throughout is strikingly oceanic and healthful. By its insular situation between the Atlantic Ocean and Long Island Sound, in the summer months particularly, it is constantly swept by the prevailing southerly

winds. When the temperature of the air in New York and Brooklyn ranges in the nineties, 20 miles away and beyond on Long Island it is from six to ten degrees lower; and in the winter it is nearly as many degrees higher than in the cities.

The places and conditions to be avoided by persons who would maintain their health are those common to most of the old villages, founded, some of them, more than two and a half centuries ago, whose inhabitants—even to the latest generation—appear not to have yet learned the dangers of polluted soil and water—predominant conditions—continuously fostering disease germs and promoting all the ills that the people fall heir to. Moreover, there are among them improved dwellings on old foundations, with broad and beautifully shaded lawns bordered by dammed brooks and stagnant ponds, as ornamental features to attract such people as would learn by practical experience the most favorable conditions promotive of intermittent-fever.

For these conditions the climate is in no respect responsible, but the people who disgrace it.

(*To be continued.*)

ATALANTIS is the name that will hereafter dignify and distinguish a location in the Atlantic Ocean about sixteen miles east of the Highlands of Navesink and thirteen miles south of the Long Island shore. The old and somewhat ill-flavored title of "Cholera Banks" will surrender to that of the classical Atalantis of Grecian mythology. Here a palatial structure is at once to be erected on huge iron stilts.

The foundations of this building will consist of thirty-six iron cylinders fifteen feet in diameter and one hundred and twenty feet in length. These piles will extend thirty feet below the bed of the ocean, and will be secured to each other, according to the claim of the engineers, by girders, cross-bracings, and in other ways, so as to defy the mightiest storm wave that ever rolled in the Atlantic. After the great tubes have been placed in position they will be filled with concrete, and the foundation, as a whole, will represent three dozen iron-incased pyramids of rock, rising from a depth below the

ocean-bed, and towering thirty feet above the level of the sea.

In the construction of the building wood and other inflammable material will not be used, but the entire superstructure will consist of bronze, steel, iron, glass, and tiling, thus making it fire-proof in the fullest acceptation of the term. The style of architecture will be imposing, as may be seen by the illustration. There will be an amphitheatre calculated to accommodate fifteen thousand people, and a roof-garden that will hold three thousand. From the latter place will be witnessed a marine panorama of majestic transatlantic liners passing near by, and every other character of water-borne craft entering and leaving the greatest harbor of the Western world. Several private piazzas for permanent hotel guests and four extensive promenades are other features of the plans, which also call for a fishing pavilion, telegraph and telephone offices, Turkish, Russian, and sea baths, a photograph gallery, and various bazars.

In order to protect themselves against the charge of erecting a menace to navigation, the promoters of the enterprise have given notice to the Government that they will bind themselves to place a powerful reflecting light in the main tower of the building, and maintain it the year round.

The officers who will be responsible for the construction of this ocean hotel are Captain R. D. Evans, United States Navy, in charge; James C. McGuire, engineer; Captain Howard Patterson, superintending engineer.

The consideration of creating a building out in the sea opens up a peculiar line of thought. As the structure will be situated more than a marine league from the nearest shore, the United States can exercise no jurisdiction over it, either in the sense of interference or protection. Atalantis may become an independent power, with every right, according to international law, to form its own government and to prescribe its own laws. Thursday, June 14th, the flag of the New Atalantis was raised on a buoy anchored on the site selected, and a new autonomy was established on a submarine sandbank.—*Harper's Weekly.*

PURIFYING SEWAGE BY BACTERIA.

EXPERIMENTS have lately been conducted by Mr. Sidney Lowcock, M.I.C.E., of Birmingham, on the destruction of the highly objectionable organic matter of sewage by special bacterial life. It seems that if cultivations of this special bacterium are maintained in the highest state of efficiency by simply keeping them well supplied with air or oxygen, they will rapidly exhaust the organic matter in a liquid, and the effluent from a filter arranged on this principle will be very pure, both chemically and dietetically. The merit of ordinary land irrigation as a method for sewage disposal depends largely on this resolution of organic matter by bacteria, and no method of sewage purification approaches the efficiency of land irrigation where this is financially practicable. The arrangement required on the new system is a very simple one, and consists of a carefully arranged sand and pebble filter, having a row of air-pipes among the lower layer of pebbles, so that air can be blown among these pebbles at a low pressure, and in a short time the pebbles become incrusted with a film of bacterial growth. This film will start itself, finding its origin in isolated bacteria always present in sewage, and until this is well formed some dissolved sewage passes through, but its objectionable character becomes steadily reduced, until in about a month's time the organic matter is almost entirely removed. The purification from this point goes on uninterruptedly, and the effluent is clear, tasteless, and odorless. Mr. Lowcock gave the results of some large-scale experiments made by him at Malvern in 1892–93, in a paper read before the Institute of Civil Engineers in November last, and the institute has recognized the value of his work by awarding him the Telford medal and premium for his paper. The rate of purification is extremely rapid. About 350,000 gallons per acre per day can be treated, and this is one of the most important features in the system, for it enables a very large amount of sewage to be dealt with on a comparatively small area.—*The London Chronicle.*

THE RED CROSS.

THE following report of the Committee of the Association of Military Surgeons of the United States on the proposed Act of Congress for the protection of the insignia and name of the Red Cross, was unanimously adopted and has been transmitted to the President of the Senate by the President of the Association, Surgeon-General George M. Sternberg, U. S. Army:

Whereas, In the International Convention at Geneva, Switzerland, August 22d, 1864, twelve nations of the world met and formulated Articles of Treaty, for the purpose of mitigating the evils inseparable from war; of suppressing the needless severity, and particularly providing that persons employed in hospitals, and affording relief to the sick and wounded, and supplies for this purpose, shall be deemed neutral and entitled to protection; and that a distinctive and uniform flag shall be adopted for hospitals and ambulances, and convoys of sick and wounded, and an arm badge for individuals neutralized; and

Whereas, Said treaty has been ratified by every civilized nation of the world with one or two exceptions of minor importance; and

Whereas, The flag adopted was the distinctive sign of the Red Cross alone, under whch insignia or sign, the purposes of the treaty shall be carried into effect, the same being a red Greek cross on a white ground, and which shall constitute the military hospital flag of all the nations within the treaty and designate all persons serving under it; and the same is adopted and used throughout the world; and

Whereas, The United States gave its adhesion by Act of Congress, March 1st, 1882, which was ratified by the International Congress of Berne, June 9th, 1882, and proclaimed by President Arthur, July 26th, 1882, thus adopting by solemn compact and treaty this universal and only military hospital flag; and as the insignia is prescribed in the United States Army Regulations, they are a part of the equipment of regular armies and militia, and are incorporated in the rules of the government and regulations of the land forces; and

Whereas, The unauthorized use of said insignia in all countries within the treaty, becoming a source of embarrassment

and serious injury, causing perplexing complications to arise, all of the nations under said treaty have taken vigorous action against this evil, and have passed stringent laws with heavy penalties for the protection of this special insignia ; and

Whereas, The same great evil exists to-day in this country —the merchant prince, the manufacturing chemist, the speculator and huckster alike, seizing upon and adopting for purposes of trade and barter, this greatest of humanitarian emblems, made sacred by solemn compact and the wisest of counsel ; and

Whereas, The fact becoming known that this country has no laws for the protection of the Red Cross, the whiskies, drugs, pills, and nostrums of the world, bearing the Red Cross on their labels, are being imported ; thus the laws for the protection of the sign in other countries are working us positive and fatal injury, and unless this wrong shall be righted and this Congress protect the interests of the Government, the Red Cross will be brought into such contempt that its value as a relief sign will be gone and its usefulness utterly destroyed ; and

Whereas, The American National Red Cross—the United States branch of the International Red Cross—has, through its honored president, Miss Clara Barton, been endeavoring for five years to secure by Act of Congress, at least a measure of the protection which is accorded this emblem in other countries ; and

Whereas, A Bill "to protect the insignia and the name of the Red Cross" was introduced in the House of Representatives this session, and, on March 23d, passed unanimously without alteration or amendment, referred to the Senate, read twice and referred to the Committee on Foreign Relations ; and, therefore, be it

Resolved, That we, the Association of Military Surgeons of the United States, in Congress assembled, do earnestly recommend the Bill now before the Committee on Foreign Relations for the protection of the insignia and name of the Red Cross, and urge its immediate passage.

Respectfully submitted,

ALBERT L. GIHON,
Medical Director U. S. Navy, Chairma
LEONARD B. ALMY,
Lieutenant-Colonel and Medical Director Ct. N. G.
CHARLES SMART,
Major and Surgeon U. S. Army.

SMALL-POX IN MASSACHUSETTS: A REVIEW OF ITS PREVALENCE.*

By S. W. Abbott, M.D., Secretary of State Board of Health of Massachusetts.

The epidemic of small-pox which began in October last being practically at an end, so far, at least, as Massachusetts is concerned, an opportunity is afforded for reviewing the situation as presented by the experience of recent years.

As compared with the epidemic of 1872–73, and the still greater prevalence in pre-vaccination times, the recent outbreak is scarcely worthy of mention. But the collection of more careful records during the past ten years furnishes data for conclusions as to the effect of better methods of control.

The data presented are the deaths in each year, the percentage of the total mortality, and the death-rate per 10,000 of the living population.

According to this table (omitted) it appears that there have been 4720 deaths from small-pox in Massachusetts in the forty years ending with 1893; and so far as is known from the returns received since January 1st, 1894, 30 deaths have occurred from the same cause during the first six months of the present year.

Of the total of 4720 deaths in the forty-year period, 4412 occurred in the first twenty years (1854–73), and 308 in the second twenty years (1874–93). The ratio in the first instance was 170 per million of the population annually, and in the second twenty years, eight per million. For the decade ending with 1893, the mortality from this cause was but little more than two per million annually.

Another table presents the number of deaths from small-pox at each period of life, as compared with the total mortality from this cause. For the sake of comparison, similar facts are presented for populations living in the seventeenth and eighteenth centuries.

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* Abstract of a communication to the *Boston Medical and Surgical Journal*, July 12th, 1894.

DEATHS FROM SMALL-POX BY AGE-PERIODS.

DISTRIBUTION OF 1000 DEATHS.

AGES.	Geneva, 1580–1760.	Kilmarnock (Scotland), 1728–1764.	Massachusetts, 1863 1892.
Under 5 years	805.5	942	324
5 to 10 years	155.5	34	70
10 to 20 years	26.5	5	119
20 to 30 years	10	5	266
30 to 40 years	2.5	....	103
40 and upward		....	106
Not stated	....	14	12
Total	1,000	1,000	1,000

Statistics giving deaths by ages are not abundant for years prior to 1800. The foregoing statistics, from authentic records of Geneva and from a very carefully kept town clerk's record in a Scotch village, are believed to be trustworthy. A comparison of these figures for periods prior to 1800 with the table for Massachusetts for a recent period show that a very marked change has taken place in the comparative mortality at different ages, and that some influence has been operative to effect a very decided change ; so that small-pox, which was almost exclusively a children's disease prior to 1800, has in recent times undergone a transformation, from the operation of some cause or other. This change has not taken place, so far as any records show, in the case of any other disease.

In Geneva, from 1580–1760, out of every 1000 deaths from small-pox, 961 were those of children under ten years of age ; and in Kilmarnock during the thirty-six years (1728–64), 976 out of each 1000 deaths from small-pox were also those of children under ten.

In Massachusetts, on the contrary, for the period (1863–92) but little more than one third (394 out of 1000) of all deaths from small-pox were those of children under ten ; and the majority were those of persons over ten years old. The number of such deaths between the ages of twenty and thirty was

more than double the number of deaths between ten and twenty.

Now, this very decided change in the incidence of small-pox at different age-periods, a change which has not taken place in the case of any other disease, can only be explained by some influence which is exerted upon small-pox, but not upon other diseases; and this factor is the practice of vaccination.

When the population of a large city invaded by small-pox is subjected to a critical investigation, as was done by Dr. Barry in his searching examination of the population of Sheffield, England, in 1887, it was found to be possible to contrast the unvaccinated with the vaccinated population living under like conditions in the same city; and the result was precisely similar to that which appears in comparing a community living in the last century with a vaccinated community living in the present century under an invasion of small-pox.

Had the 324 infants in each 1000 who died of small-pox in Massachusetts in the period (1863–92) been successfully vaccinated, the contrast between the column for Massachusetts and the two preceding columns taken from pre-vaccination periods would undoubtedly have been much more striking, since the death from small-pox of a successfully vaccinated infant is an almost unknown event.

As the protection afforded by primary vaccination begins to wane, and this well-known immunity is not re-established by re-vaccination, the deaths begin to increase, as is shown in the column for Massachusetts by the figures 70, 119, and 266 for the successive age-periods 5–10, 10–20, 20–30, these deaths being made up partly of unvaccinated persons who had not been exposed to small-pox in infancy, and partly of those who had been vaccinated in infancy, but had never submitted themselves to re-vaccination.

During the past ten years very careful records have been kept, in consequence of a statute of 1883, requiring immediate notice of all cases of small-pox to the State authorities. From these records it has been possible to collect definite evidence relative to the protection afforded by vaccination in this State.

SMALL-POX IN MASSACHUSETTS, 1885–93.

Total number of reported cases of small-pox, nine years and a half, ending June 30th, 1894.	350
Total number of deaths from small-pox for same period	64
Ratio of deaths to cases	18.3 per cent.
Of the foregoing, there were among the vaccinated	141 cases.
Of the foregoing, there were among the vaccinated	6 deaths.
Ratio of deaths to cases in the vaccinated	4.3 per cent.
There were among the unvaccinated	158 cases.
There were among the unvaccinated	44 deaths.
Ratio of deaths to cases among the unvaccinated	27.8 per cent.
There were among those in whom the facts relative to vaccination were doubtful or unknown	51 cases.
There were among those in whom the facts relative to vaccination were doubtful or unknown	14 deaths.
Ratio of deaths to cases among these	27.4 per cent.

It is a favorite practice among the opponents of vaccination to quote the severe epidemic of small-pox of 1872–73 in Massachusetts to disprove the efficacy of vaccination. All such statements, however, have absolutely no value, from the fact that they fail to show any definite information as to the comparative mortality from small-pox of the vaccinated and the unvaccinated. As a matter of fact, there are no definite statistics upon this point in Massachusetts for years prior to 1885.

Hence the value of the foregoing tabular statements may be recognized, as confirming similar inquiries made in other countries. By this table it appears that the mortality from small-pox among the unvaccinated was 27.8 per cent, as compared with only 4.3 per cent among the vaccinated, the former being more than six times as great as the latter.

Of the foregoing 350 cases, 138 (or nearly 40 per cent) occurred in Boston, 39 in Holyoke, 31 in Chicopee, 20 in Spring-

field, 21 in Worcester, 17 in New Bedford, 12 in Lowell, 9 in Westfield, 8 in Chelsea, 7 in Huntington, 6 in Fall River, 4 at the State almshouse in Tewksbury, and the remainder were scattered in smaller numbers in 34 cities and smaller towns. Twelve of these cities and towns were places in which paper-mills using rags are located ; but the actual number of paper-mill operatives attacked with small-pox was only 18, a smaller ratio than that which prevailed in earlier years. Several persons were attacked who were doubtless indirectly exposed to this influence, being persons of other occupations living in the same families or tenements with paper-mill operatives.

A SECOND LAURA BRIDGMAN—HELEN KELLER.

MISS HELEN KELLER, about whom we have heard from time to time, is now thirteen or fourteen years of age. She became deaf, dumb, and blind in infancy, and yet she has been educated up to such a point that she was enabled, at twelve years of age, to write, by means of her own typewriter, a sketch of her having been led forth from darkness into the light of knowledge. Her sketch is beautifully composed, and is said by the editor of the *Youth's Companion*, in which paper the composition has been published, to be free from errors of spelling and the like. Her diction is refined and graceful, she makes occasional reference to her readings of the poets, and she is filled with gratitude and loyalty to those who have educated her and taught her to read and write and make use of oral speech. Not only this, but this little lady is engaged in the good work of collecting a fund for the education of an afflicted deaf-mute—Thomas Stringer, of Pittsburg.

This autobiographical sketch of a rescued intellect may with profit be perused by every physician in the land—we know of no other single profession or walk in life that can more fully appreciate the struggle against and the victory over deaf-mute blindness. The following paragraph, all that we can here quote, recites how this little deaf-mute made the acquaintance of old Neptune. She had probably never before received a particle of harsh treatment ; but old Ocean was positively rude. She says :

"Suddenly we stopped, and I knew, without being told, the sea was at my feet. I knew, too, it was immense! awful! and for a moment some of the sunshine seemed to have gone out of the day. But I do not think I was afraid; for later, when I had put on my bathing suit, and the little waves ran up on the beach and kissed my feet, I shouted for joy, and plunged fearlessly into the surf. But, unfortunately, I struck my foot on a rock, and fell forward into the cold water.

"Then a strange, fearful sense of danger terrified me. The salt water filled my eyes and took away my breath, and a great wave threw me up on the beach as easily as if I had been a little pebble. For several days after that I was very timid and could hardly be persuaded to go into the water at all; but by degrees my courage returned, and almost before the summer was over I thought it the greatest fun to be tossed about by the sea waves.

"Oh, the happy, happy hours I spent, hunting the wonderful shells! How pretty they were with their lovely, fresh hues and exquisite shapes! And how pleasant it was to sit on the sandy bank and braid the sea grass, while teacher told me stories of the sea and described, in simple words that I could understand, the majestic ocean and the ships that drifted in the distance like white-winged birds!

"People sometimes seem surprised that I love the ocean when I cannot see it. But I do not think it is strange. It is because God has planted the love of His wonderful works deep in the hearts of His children, and, whether we see them or not, we feel everywhere their beauty and mystery enfolding us."

She tells in another part of her story of her great grief in the loss, by accidental death, of her pet mastiff, Lioness, but admits that it turned her attention to the doing good to another forlorn deaf-mute blind boy, Thomas Stringer, of Pittsburg. She made use of the money sent her to buy a new pet to help defray the cost of education, at Mr. Anagnos's school at Boston, of "my little human plantlet," as she styles the adopted boy. This little girl is already worthy to be enrolled in the regiment of philanthropists, although she has only recently entered upon her fourteenth year.

THE MEDALS, JETONS, AND TOKENS ILLUSTRATIVE OF SANITATION.*

By Dr. H. R. Storer, of Newport, R. I.

X. Epidemics. *The Plague.*

Holland.

In addition to the medals already given of Pieter Van der Werf, who put an end to the epidemic during the siege of Leyden in 1574, there are the following :

2229. Obverse. Bust, holding a siege token. Inscription : Pieter Adriaanszoon Van Der Werf.

Reverse. Within laurel wreath : Daar't Klock gedrag van —Leiden's Held | Nu Vijfmaal Vijftig jaren teld : | Zo heeft het Dankbaar Na geschlacht | Dit Eer—Metaal hem | toegedacht | den 3 October 1824. | W(esthoff). By A. Bemme. But one struck. Guioth, *Revue belge de numismatique*, 1848. p. 450, No. 258 ; Dirks, i., p. 188, No. 237. Unmentioned by P. and R.

2230. Obverse as preceding.

Reverse. Ter Gelegenheid Van Het 250 Jarig Jubelfeest Van Het Outzet. (The Siege of Leyden.) Tin. But one struck. Guioth, *loc. cit.*, 1848, p. 451, No. 257 ; Dirks, i., p. 189, No. 238. Unmentioned by P. and R. These were both struck in 1824, upon the two hundred and fiftieth anniversary of the Siege of Leyden.

Brussels, 1636.

2231. Obverse. In beaded circle, Elias fed by ravens. Behind him the arms of Engelbert Raverschot (Inspector of Canals in 1612). Legend : Vt PaVit.eDaX.VateM.CorVVs. (=1636.) Exergue : an angel's head (mint mark).

Reverse. Fortune, upon her ball, facing. In each hand a cornucopia, from which flowers are falling. Legend : FortVna. ReDVX. VersVra. VICeM (=1636) (rosette). Van

* Continued from page 134.

Loon, ii., p. 223 ; Neumann, No. 34,579. Unmentioned by P. and R. Struck upon the exemption of the Spaniards in the Netherlands from the plague (Auf der Verschonung der Spanier von den ansteckenden Krankheiten).

Upon the following medal the words "Peste noire" are used allegorically.

2232. Obverse. A sign-post, upon which, to left : Berlin ; to right, Verviers Below, a man with a broom expelling two priests and a child. Upon the ground, a book. Inscription : De La Vermine Noire Delivre Notre Sol

Reverse. Première Mesure Contre L'Invasion | De La | Peste Noire | —.— | Expulsion | De 50 | Petits Frères | Allemands | (rosette) Mai 1879 (rosette) Bronze. 20. 30 mm. In my collection.

GERMANY. *Breslau*, 1633.

2233. Obverse. Like No. 754 (P. and R., No. 293), save that H. R are wanting.

Reverse also, save that in the inscription of sixteen lines there are Vnd for V. in two places, Königlichen for Königl., and Breslaw for Bresl. It also has the addition : Mit R.K.M. Gnad. | V.Freyheit.W. | Hans Rieger. Silver. Unmentioned by P. and R. Reimann Cat., Frankfort, 1892, Part II., No. 6402.

Donauwörth, Bavaria.

2234. Obverse. Statues of the Virgin, with shields of Pope Zachary and St. Benedict.*

Reverse. St. Antony of Padua, with shield. Brass. 60 mm. Unmentioned by P. and R. Helbing Cat., April 30th, 1894, No. 1149.

2235. Obverse. The Virgin and Zachary shield.

Reverse. St. Benedict and shield. Brass. 55 mm. Unmentioned by P. and R. *Ibid.*, Nos. 1150–51.

2236. As preceding. Brass. 43 mm. Unmentioned by P. and R. *Ibid.*, No. 1152.

* The list of the medals of St. Benedict given by Pfeiffer and Ruland in "Die Deutschen Pestamulete" is so very complete as to deserve the highes commendation.

Ebersberg, Bavaria.

2237. Obverse. Upon shield, St. Sebastian.
Reverse. The monogram Jesu. Silver. 40 mm. Unmentioned by P. and R. *Ibid.*, No. 1172.

2238. As preceding. Tin. 33 mm. Unmentioned by P. and R. *Ibid.*, No. 1173.

2239. As preceding. Silver. 25 mm. Unmentioned by P. and R. *Ibid.*, No. 1174.

2240. Obverse. SS (St. Sebastian.)
Reverse. As preceding. Silver. 41 mm. Unmentioned by P. and R. *Ibid.*, No. 1175.

Edenberg, Swabia.

2241. Obverse. The Madonna.
Reverse. Sts. Ulrich and Nicholas, with Benedictine shield. Silver. Heart-shaped. 40 mm. Unmentioned by P. and R. *Ibid.*, No. 1177.

Feldkirchen, Bavaria.

2242. Obverse. The Madonna.
Reverse. The Benedictine Cross. Silver, gilt. Heart-shaped. Unmentioned by P. and R. *Ibid.*, No. 1218.

Frauenberg.

2243. Obverse. The Madonna.
Reverse. Sts. Benedict, Joseph, and Antony. Beneath, the church. Brass. 30x35 mm. Unmentioned by P. and R. *Ibid.*, No. 1222.

Lechfeld, Swabia.

2244. Obverse. Battlefield.
Reverse. Sts. Benedict, Ulrich, and Afra. Lead, plated. Attributed by P. and R. to Augsburg. *Ibid.*, No. 1306.

Munich.

2245. Obverse. The arms of the city, between the Virgin and St. Antony of Padua.

Reverse. Sts. Benedict and Scholastica. Before them, the shield of St. Benedict. Brass. Oval. 23x25. 35x39 mm. By Pieter Seel, of Salzburg. Helbing Cat., November 6th, 1893, No. 2380. Unmentioned by P. and R.

2246. Obverse as preceding.

Reverse. The Death of St. Benedict. Above, his shield. Brass. Oval. 23x25. 35x39 mm. By Pieter Seel, of Salzburg. *Ibid.*, No. 2381. Unmentioned by P. and R.

2247. Obverse. St. Florian, with banner, extinguishing a burning house.

Reverse. The Madonna, between shields of St. Benedict and Pope Zachary. Silver. 38x41 mm. Unmentioned by P. and R. Helbing Cat., April 30th, 1894, No. 1366.

2248. Obverse as preceding.

Reverse. The Crucifixion, and Benedictine shield. Silver. 37x40 mm. Unmentioned by P. and R. *Ibid.*, No. 1367.

2249. Obverse. Moses and the brazen serpent.

Reverse. The miraculous image at Altötting, with the Benedictine shield. Silver, gilt. 37x43 mm. Unmentioned by P. and R. *Ibid.*, No. 1368.

Ochsenhausen, Würtemberg.

2250. Obverse. St. Sebastian.

Reverse. Three arrows. Silver. Unmentioned by P. and R. *Ibid.*, No. 1429.

Weingarten, Würtemberg.

2251. Obverse. A reliquary.

Reverse. St. Benedict, and sick persons. Silver, gilt. 27x34 mm. Unmentioned by P. and R. *Ibid.*, No. 1564.

2252. Obverse. The Crucifixion.

Reverse. St. Benedict, with shield. Brass. 34x40 mm. Unmentioned by P. and R. *Ibid.*, No. 1565.

Wiblingen, near Ulm.

2253. Obverse. The Madonna, with two ecclesiastics.

Reverse. St. Benedict, with shield. Silver. 28x34 mm. Unmentioned by P. and R. *Ibid.*, No. 1590.

AUSTRIA. *Adelwang.*

2254. Obverse. The Madonna, between two angels. Beneath, the Benedictine shield.

Reverse. St. George and the dragon. Silver. 32x38 mm. Unmentioned by P. and R. *Ibid.*, No. 1013.

Altötting, 1684.

2255. Obverse. The votive altar and statue of the Madonna at A.

Reverse. Sts. Charles Borromeo and Benedict. Between them the shield of the latter. Silver. Oval. 25x28. 35x41 mm. By Pieter Seel, of Salzburg. *Ibid.*, No. 815. Unmentioned by P. and R.

Kettenzell am Harmersbach, near Baden.

2256. Obverse. The Virgin, in clouds, to whom a kneeling man offers a chain. Inscription: S·M·Zv·K·Ze·(Holy Mary of Kettenzell.)—A·Harmer—SP.

Reverse. The death of St. Benedict. Above, his shield. Gilt. Oval. 20x25. 34x40 mm. *Ibid.*, No. 830. Unmentioned by P. and R.

Maria-Plain, near Salzburg, 1684.

2257. Obverse. A church, above which the Virgin and Child.

Reverse as the last but one (Sts. Ch. Borromeo and Benedict). Silver. Oval. 24x26. 37x42 mm. By Pieter Seel, of Salzburg. *Ibid.*, November 6th, 1893, No. 832; *ibid.*, April 30th, 1894, No. 1341. Unmentioned by P. and R., unless indeed it is No. 108 of their "Pestamulete."

Mariazell, Styria.

2258. Obverse. The miraculous image, supported by angels.

Reverse. Crowning of the Madonna by the Trinity. Below, Sts. Sebastian and Roch, with the Benedictine shield. Silver. 34x45 mm. Unmentioned by P. and R. *Ibid.*, No. 1347.

Prague, 1613.

2259. Obverse. Hand and irradiated circle.

Reverse. Inscription. Silver. Struck by Heinrich Julius von Braunschweig-Wolfenbüttel. Zschiesche & Köder Cat., October, 1893, No. 2886. Unmentioned by P. and R.

Salzburg.

2260. Obverse. The Madonna, with Zachary shield.

Reverse. St. Benedict, with shield. Silver. 35x40 mm. Unmentioned by P. and R. Helbing Cat., April 30th, 1894, No. 1484.

2261. Obverse. Benedictine shield, and inscription.

Reverse. St. Michael and the dragon. Silver. 26x30 mm. Unmentioned by P. and R. *Ibid.*, No. 1485.

SWITZERLAND. *Einsiedeln, Canton Schyz.*

2262. Obverse. The Madonna.

Reverse. A monstrance, between the shields of St. Benedict and Pope Zacharias. Silver, brass. Oval. 40x44 mm. *Ibid.*, November 6th, 1893, No. 822 ; *ibid.*, April 30th, 1894, No. 1188. Unmentioned by P. and R.

Fischingen, a Benedictine Abbey in Canton St. Gall.

2263. Obverse. St. Ida.

Reverse. St. Benedict. Behind him : In Above, his shield. Brass. Oval. 28x35 mm. *Ibid.*, November 6th, 1893, No. 823 ; *ibid.*, April 30th, 1894, No. 1220. Unmentioned by P. and R.

2264. Obverse as preceding.

Reverse. St. Benedict, without shield. Brass. Oval. 14x17. 22x26 mm. *Ibid.*, November 6th, 1893, No. 824. Unmentioned by P. and R.

Reichenau, Lake Constance.

2265. Obverse. St. Mark.

Reverse. St. Benedict, with shield. Brass. 26x29 mm. Unmentioned by P. and R. *Ibid.*, April 30th, 1894, No. 1468.

Stein am Rhein, Canton Schaffhausen.

2266. Obverse. The Madonna.

Reverse. Sts. Vincent and Benedict. Brass. Oval. 29x34 mm. *Ibid.*, November 6th, 1893, No. 847. Unmentioned by P. and R.

ITALY. *Camerino.*

2267. Obverse. Shield, with inscription in nine lines.

Reverse. Head of St. Anastasius. Brass. 40x45 mm. Unmentioned by P. and R. *Ibid.*, April 30th, 1894, No. 1130.

2268. As preceding, but inscription in ten lines. Plated. 30x35 mm. Unmentioned by P. and R. *Ibid.*, No. 1131. In my collection.

Milan.

The name of Dr. A. Ferrario occurs not merely upon Nos. 731 and 732, but also upon No. 212, which was previously erroneously attributed to Rome.

Venice, 1636.

2269. Obverse. The Virgin with outstretched mantle, beneath which two monks are kneeling. Legend: Madre·Di· Misericordia Exergue: +Anno· Dom+. 1636.

Reverse. A helmeted and scrolled shield, upon which a spread eagle to left, bearing chevron upon which a star between two fleurs-de-lys. Inscription: Vinc· Dal Portico Gvard· Da Mattin (rosette) Bronze. 43 mm. Edges beaded. In my collection. Unmentioned by P. and R.

Small-pox. Inoculation.

ENGLAND.

2270. Obverse. Laureated bust, to right. Inscription: Georgius I. D. G. Mag. Br. Et Hib. Rex F. D.

Reverse. Within circle: (etc.) 1721 Inoculation | For The Small Pox | Instituted. Lead. Spink & Son, *Num. Circu-*

lar, September, 1893, p. 367, No. 26. Unmentioned by P. and R.

Vaccination.

ENGLAND.

In addition to the medals of Dr. Edward Jenner, Nos. 926–935, there is the following :

2271. Obverse. Allegorical representation of vaccination.

Reverse. Edvard Jenner, Doctor In De Geneeskvnde, | Geboren Den 17 Mey. 1749 Te Berkley In Het Graaf | schap Glocester In Engeland En Aldaar Overleden | Den 26 January 1823. Uitvinder Der Koepokinenting | In Het Jaar 1775, Doch Eerst In 1798 Door Hem | Bekend Gemaakt. By A. Bemme, at expense of H. Westhoff, Jr. Only one struck. Westhoff Cat., No. 3866. I owe the description to Dr. J. J. B. Vermyne, of New Bedford. Unmentioned by P. and R.

HOLLAND.

See preceding.

2272. Obverse. Bust. J. P. Schouberg. Inscription : Wilh.II. Nass:Belg:Rex-Luxemb:M:Dux.

Reverse. Palm leaves. W. H. Swart. | Med. Et. Art. Obst. Doctori. | In Pago Kollum | De Propaganda | Variolarum Vaccinarum | Insitione | Bene Merito | Rex D. | MDCCCXL I have its description from Dr. Vermyne. Unmentioned by P. and R.

FRANCE.

In addition to Nos. 962 and 963 (Vaccinations Municipales de Paris) there are two others.

2273. Obverse. Like that of No. 962 (cow to left, etc.), but engraver's name is absent.

Reverse similar to that. Silver. 21. 32 mm. In my collection. Unmentioned by P. and R.

2274. As No. 962, save that engraver's name on obverse is very minute, and on reverse the oak branches touch above, and droop down. Silver. 21. 32 mm. In my collection. Unmentioned by P. and R.

Cholera.

SOUTH AMERICA. *Argentine Republic.*

2275. Obverse. Charity, upon a crescent. Inscription : La Municipalidad De Bahia Blanca.

Reverse. Between palm leaves, the staff of Æsculapius. Inscription : Premio A La Abnegacion Ejercida Durante La Epidemia De Coléra 1886–1887. Plated. Rosa, *Monetario Americano*, p. 146, No. 491.

2276. Obverse. Within laurel wreath : Cólera De 1886–1887. Exergue : R. Grande

Reverse. Al Dr Amaldo Cantoni El Pueblo De La Plata. In field, between palm leaves, the staff of Æsculapius. Gilt copper. *Ibid.*, p. 161, No. 531.

2277. Obverse. Arms of the city of Salta. Inscription : El Vecindario Del Pueblo De Corillos Agradecido. Gilt copper. *Ibid.*, p. 163, No. 537.

Reverse. Between palm leaves, the staff of Æsculapius. Beneath : Epidemia Del Cólera 1887. Inscription : Al Dr. Adolfo M. Castro.

2278. Obverse. Arms of the city of San Luis. Beneath : Agradecido. Inscription : El Pueblo De Mercedes Al Dr. A. Ferrand.

Reverse. Within laurel, the staff of Æsculapius. Inscription : Epidemia Del Cólera*Año 1886–1887 Gilt copper. *Ibid.*, p. 163, No. 539.

Uruguay.

2279. Obverse. Arms of the republic. Inscription : Al Dr. Jacobo Z. Berra. Ayacucho 1887

Reverse. Within laurel : Sus Amigos A Nombre De La Humanidad Agradecida Exergue : Grande Gilt copper. *Ibid.*, p. 162, No. 533.

HOLLAND. *Utrecht.*

(994.) Obverse. Crowned arms of the province, supported by two lions. Beneath : Stad Utrecht

Reverse. Between palm leaves : Ter | Erkentenis | Wegens | Hulpbetoon | Aan | Choleralyders | 1833. Communicated

to me by Dr. J. J. B. Vermyne, of New Bedford. It is evidently No. 994, of which I had not previously the description. Unmentioned by P. and R.

BELGIUM.

2280. Besides Nos. 1015 and 1016 (Services Rendus etc. 1832, sizes 24 [37 mm.] and 11 [16 mm.]), there is one of size 16 (25 mm.). In the Government collection. Unmentioned by P. and R.

FRANCE. *Isle of Bourbon.*

2281. Obverse. Bust, to left. Duclos F. Inscription: La Commune de S^{t} Denis Isle Bourbon Reconnaissante á M^{r} Pommier | Officier de Santé—Entretenu de la Marine

Reverse. Pour S'etre | Volontairement Devoué | au Service du Lazareth | Pendant la Maladie | Contagieuse qui a Regné | á St Denis en Janvier | et Fevrier 1820 32. 51 mm. Weyl, Fonrobert Cat. (Asien), No. 6140. Unmentioned by P. and R. The late Professor William Lee, of Washington, looked this epidemic up for me, and found (*Edinburgh Medical and Surgical Journal*, xvii., 1821, pp. 517–526) that at the date indicated cholera prevailed throughout the island of Mauritius and its neighborhood. It was brought from Ceylon, appeared at Port Louis November 16th, 1819, and reached Belembre, January 24th, 1820, where it remained three months.

In addition to the medalets of St. Roch, Nos. 1026, 1027, 1027^{a}, 1027^{b}, 1027^{c}, 1832, and 2022–26, there is still another.

2282. Obverse. The crook of staff touches inscription after Roch, and the left hand touches after Nous. Exergue vacant.

Reverse. The pine-tree above St. Hubert is proportionately very large. Nickel. Oval. 10x12. 15x19 mm. Unmentioned by P. and R. In my collection.

SPAIN. *Barcelona*, 1854.

2283. Obverse. Shield, with branch of flowers. Beneath: De Gracia Inscription: Ayunto Cons^{l} De La Villa *

Reverse. Staff with two serpents, within two ornamented semi-circles. Beneath: Epidemia De 1854. Inscription: * Al Servicio Medico * Silver. 22. 28 mm. Catalogo De Ramón, 1892, iv., p. 225, No. 14,319. Unmentioned by P. and R.

Scarlet-fever.

In addition to Nos. 1130-35 and 2036, there appeared to be another medal of Dr. Samuel Hahnemann, with obverse as that of No. 1132 (Emile Rogat 1836), and "reverse blank." (Silver. 32. 51 mm. Weyl, One Hundred and Twenty-ninth Cat., 1893, No. 104.) I have procured, however, the specimen in question, and it proved to be merely the obverse shell of No. 1132.

Phthisis.

Besides the medals of Dr. Robert Koch already given, Nos. 2037–42, there is the following:

2284. Obverse. Bust facing and to right, with glasses. Inscription: Profess:Dr—Robert Koch

Reverse. Between scrolls: Lunge | Kräftig Brass. 13. 20 mm. Edges milled. In my collection.

As the description of No. 2039 was very imperfect, it will now be repeated.

(2039.) Obverse. Bust, facing and to right, with glasses. Upon breast, crossed laurel branches and the staff of Æsculapius. Beneath, at left: P. Türpe Sculp.; at right: A. Pulst Cis. Inscription: Professor Dr.—Robert Koch

Reverse. Hygieia, laureated and with serpent, seated upon a throne, behind which to right a laurel branch. At left, patients, and at right, two physicians and a book-case. In front, Dr. K. and a kneeling woman and child. Beneath, on base: Oertel Berlin Dir.—E. Deitenbeck Fec. Exergue: a flying dragon, transfixed by a spear. Inscription: Zur Erinnerung An Die Erfindung Des Tuberculin | Anno—1890 Silver, bronze, white metal. 38. 60 mm. Edge of obverse beaded; of reverse, starred. In my collection.

A recent American token belongs in this connection.

2285. Obverse. Cod-Liver Glycerine Co. | A | Prescrip-

tion | Remedy | Cod-liver, | Glycerine | Mixes With All | Medicines. | St. Louis, U.S.A.

Reverse. Aluminum Pocket Piece | This Will | —Identify — | —— | | ——— | —In Case of— | Accident | Trade Mark Aluminum. 19. 30 mm. Storer, *American Journal of Numismatics*, April, 1893, p. 81, No. 594. In my collection.

Syphilis.

To the medals of Dr. John Hunter, Nos. 1143, 1143ª, 1144, 1841, 1842, 2043 and 2044, there is to be another added.

2286. Obverse. Bust, to left, in loose coat. Tassie F. Upon truncation : John Hunter 1791.

Reverse blank. Bronze. Oval. 45x59. 72x93 mm. Wroth, *Numismatic Chronicle*, third series, 1886, p. 320; Grueber, *ibid.*, 1892, Part IV., p. 314.

Leprosy.

2287. Obverse. F. Card. De La Rochefovcavlt Gr. Avm. De Fr Neumann, No. 30,571. Unmentioned by P. and R.

Reverse. Camera. Reform. Hosp. Et. Lepr.

Epizoötics.

SOUTH AMERICA. *Argentine Republic.*

2288. Obverse. Between palm leaves and upon parchment : Premio Inscription : Sociedad Argentina Protectora De Los Animales

Reverse. Interlaced with laurel : 24 De Mayo. Plated. Rosa, *loc. cit.*, p. 147, No. 497.

ENGLAND.

2289. Obverse. Hand holding pistol, shooting a horse ; other horses lying dead. Above, arms of Colgate family. To left : J. M. (John Milton.) Inscription : Their Value Upward Of £300 Exergue : Tutamen | Voluntarily. Destroyed. | By D. Colgate Of. | Orpington | Kent | 1795

Reverse. Within field : We. Also. Are. But. As. Yesterday. Our. Days. A. Shadow. He. Taketh. Away. Who. Can. Hinder? Man. (Also.) Giveth. Up. The. Ghost. And. Where. Is. He ! Job.

Beneath, arms of Kent. Inscription: A Mark. Of. Respect To The R^{t} Hon.. T. Skinner. S^{r}. R.. Glode. K^{t} And. M^{r} W.. Austin. Bronze. 20. 32 mm. Grueber, *Numismatic Chronicle*, third series, x., 1890, p. 67, pl. IV., fig. 7 (of obverse).

SCOTLAND. *Veterinary School, Edinburgh.*

2290. Obverse. Androcles extracting a thorn from a lion's paw; at right, two palm-trees; at left, a rock. No inscription.

Reverse. A wreath of thistle. Bronze. 32. 49 mm. Communicated to me by Mr. A. H. Lyell, of London.

FRANCE.

Dr. Henri Bouley (1814), of Paris. Veterinary surgeon.

"De la peripneumonie epizootique du gros bétail," Paris, 1854, 8°; "La Rage, moyen d'en éviter les dangers et de prévenir sa propagation," Paris, 1870, 8°; "Maladies contagieuses du bétail," Paris, 1872, 8°.

2291. Bronze, silvered. By Louis Oscar Roty. (I have not yet obtained its details.) Grolier Club Cat., April, 1893, p. 3, Nos. 18 and 19.

In addition to the medals of Dr. Louis Pasteur, Nos. 709, 1199 and 2047, there are the following:

2292. Obverse. Head, to right. Inscription: Louis Pasteur De L'Academie Des Sciences. Exergue: Alphée Dubois | 1882

Reverse. A | Louis Pasteur | Ses Confreres | Ses Amis | Ses Admirateurs | 1882 Bronze. 43. 68 mm. Kluyskens Cat., p. 72, No. 120; *Revue belge de numismatique*, 1883, p. 317.

2293. Obverse. Bust, with skull-cap, to left. At right, above: Lovis | Pastevr Behind, perpendicularly: Ne A Dôle Le XXVII Decembre | MDCCCXXII Exergue, upon a quadrilateral: Povr·La·Science·La·Patrie | L'Hvmanite

Reverse. Springing from lower left, a spray of roses and laurel. Above: A Pastevr | Le·Jovr·De·Ses·70·Ans· | La· Science | Et L'Hvmanite | Reconnaissan—tes Below, at left: XXVII | Decembre | MDCCCXCII Gold. Rectangular plaque. By Roty. *Daily Graphic*, January 4, 1893, fig.

Conferred at the Sorbonne upon P.'s seventieth birthday, by M. Abbadie, President of the Academy of Science, from an international subscription.

2294. Obverse. Clothed bust, three quarters to left. Beneath : A. Patey (of Paris, a pupil of Chaplain). Inscription : Louis Pasteur (etc.)

Reverse blank. Bronze. 60. 95 mm. Communicated to me by Dr. F. P. Weber, of London.

I was unable to give the description of No. 709. It is as follows :

(709.) Obverse. Bust, to right. Inscription : Academie. Des. Sciences. Française. Etc. At left : Ne | A | Doleivra | MD | CCCXX | II | Ferments | Maladies At right : Dissymetrie | Molecvlaire Beneath bust : MDCCCLXXXIII | .Ringel.Sc. Below, on band : .Louis.Pasteur.

Reverse blank. Bronze. 112. 170 mm. I have been shown this medal by Mr. Baker, of the Gorham Manufacturing Company at Providence.

The following belongs here.

2295. Obverse. A fleur-de-lys, irradiated, amid clouds.

Reverse. A horse-shoe, upon two oak branches tied by ribbon. Inscription : École Royale Veterinaire *.—Prix De Pratique. Oval. 20x25. 31x40 mm. *Méd. Fr. du Musée monetaire*, p. 295, No. 83[a].

2296. As preceding, save upon reverse the device is a lancet. Oval. 20x25. 31x40 mm. *Ibid.*, p. 295, No. 83[b].

GERMANY. *Hamburg.*

2297. Obverse. A winged youth, over whose head a star, caresses a horse and dog, near which a recumbent ox. Beneath : Hvittig Fec. At right : Loos D.

Reverse. Oak branches tied by long ribbon, and intersected above by the city arms. Beneath, three diamonds. Inscription : Hamburger Thier — schutz — Verein Gestiftet 1841 Bronze. 28. 44 mm. Gädechens, *loc. cit.*, No. 2149. In my collection.

2298. Obverse. Hammonia erect, rests left hand on armorial shield of city, and with right extends her mantle over a horse, ox, and dog. Upon a rock, at right : Rohheit.

Upon left of base: Siegmund & C° Inscription: Verein Gegen—Thierquælerei Exergue: Hamburg

Reverse. Das Thier | Ist Der Unmündige | Bruder | Des Menschen. Silver, bronze. 28. 44 mm. Struck in 1834. *Ibid.*, No. 2095. In my collection.

SPAIN. *Madrid*, 1880.

2299. Obverse. Head of Queen. Upon neck: Sala. Inscription: Exposicion Nacional De Plantas Flores Y Aves. 1880. Exergue: Protectora. S. M. La Reina D^na^ Maria Cristina

Reverse. Within a wreath of laurel and palm: Premio In field: Union Internacional. De Sociedades Protectoras De Animales 1878. Inscription: Sociedad Madrileña Protectora De Los Animales Y De Las Plantas Bronze. 37. 57 mm. Catalogo de Ramón, iv., p. 240, No. 14,403.

(*To be continued.*)

THE LIFE OF THE WESTERN BORDER, now fast vanishing, might never have had a competent historian had not a happy chance taken a young Philadelphian into Wyoming and Arizona three years ago. After his return to the East, Owen Wister wrote a story about the cowboy and his life, and this story was so successful that he wrote others, and then went West again, at the request of the editor of *Harper's Magazine*, to continue his study of this interesting type. To sketches of the cowboy Mr. Wister has added the desert inn-keeper and trader, the frontier troop, and the Indian debauched by civilization. "Specimen Jones," his latest story, in the July *Harper's*, deals with the chance inmates of an adobe tavern in Arizona. The picture of this lawless company will not attract timid persons to the Southwest, at least not until the favorable reports of bullet-proof clothing have been confirmed, but it will hold the reader from the first word to the last.

BIOGRAPHICAL SKETCH OF THE LATE EZRA M. HUNT, M.D., Sc.D., LL.D.

DR. EZRA M. HUNT was of English-Welsh descent. He was born in Metuchen, Middlesex County, N. J., January 4th, 1830. His father was the Rev. Holloway W. Hunt, for many years pastor of the First Presbyterian Church of Metuchen. He was a Jerseyman, a native of Hunterdon County, though the family came originally from Westchester County, N. Y.

Dr. Hunt's early education was received in the Irving Institute, Tarrytown, N. Y. He entered Princeton College in 1845, graduating in 1849. Soon after, having decided upon the profession of medicine as the calling to which the Providence of God led him, he began the study of medicine under Dr. Abraham Coles, an able practitioner of Newark, N. J., at the same time attending lectures at the College of Physicians and Surgeons, New York City, from which college, after a three years' course, he received the degree of M.D. in March, 1852. He commenced the practice of medicine in Metuchen. In 1853 he was appointed lecturer on Materia Medica and Therapeutics in the Vermont Medical College, at Woodstock. In 1854 he was chosen Professor of Chemistry in the same institution, but during 1855 he concluded to resume his practice, and returned to Metuchen, where he successfully engaged in the practice of his chosen profession until 1862. Then he was impelled by patriotic motives to join the Union Army. He entered the service for nine months as assistant surgeon of the Twenty-ninth New Jersey Infantry. After serving with the regiment for two months he was placed in charge of the Calvert Street Hospital, Baltimore, Md., and remained there until the expiration of his term, when he returned to Metuchen, and once more resumed the practice of medicine. During these years he had been a faithful and prominent member of the Middlesex County District Medical Society, serving twice as its presiding officer and representing it frequently at the State Society annual meetings.

In 1864 he was elected President of the Medical Society of

New Jersey, of which he was an active and influential member. On retiring from the presidency at the annual meeting in 1865, he delivered an able and eloquent address on "Our Profession in its Threefold Relations, as a Science, a Business, and an Art." Since then he has been a Fellow of the State Society, and has always taken a deep interest in its proceedings, contributing able papers and serving on important committees. He not only represented the State Society frequently at the annual meetings of other State medical societies, but he was elected one of its elegates to the American Medical Association in 1865, 1868, 1869, 1873, 1875, 1877, and 1879, and at the 1880 annual meeting of the National Association, held in New York City, he was elected one of the vice-presidents. The State Society also appointed him a delegate to the International Medical Congress in 1877 and again in 1882.

Dr. Hunt was not a selfish man, but a thoroughly conscientious practitioner and a philanthropic Christian gentleman. The profession of medicine to him was not a money-making business, but a calling in which he could serve God and benefit his fellow-men, and so we are not surprised that early in his professional life he was led to believe that the prevention of disease is far better than its cure, and to act out his belief in thorough study of the causation of preventable diseases, and earnest effort to secure public interest, as well as the co-operation of his professional brethren, in the application of the laws of sanitary science to secure deliverance from avoidable causes of disease.

We believe that to Dr. Hunt should be given the credit of being one of the originators of the sanitary movement in the United States, which has wrought such beneficial results, and say that to him, more than any other man, the State of New Jersey owes its present system of sanitary legislation and administration, and the general acceptance of the system by the cities, towns, and townships throughout our State; the formation of local health boards and the creation of a popular recognition of the wisdom and economy of sanitary regulations.

At the annual meeting of the State Medical Society, in 1866, Dr. Hunt offered the following:

"That whereas there are matters relating to sanitary, hygienic, and charitable provision for the citizens of the State, which, in the opinion of the Medical Society of New Jersey, merit the attention of our State authorities, therefore,

"*Resolved*, That a committee of five be appointed to present, on behalf of this Society, in such form as they deem proper, the subject to executive and legislative consideration."

This was adopted, and Dr. Hunt was appointed chairman of the committee. As a result of this action, after conference with Governor Ward and members of the Legislature at the Executive Chamber, a State Sanitary Commission was created by an act of the Legislature of 1866, Dr. Hunt being made its president. They were thus enabled officially to draw the attention of the State to the question of public hygiene and awaken an interest in the whole subject. This commission subsequently recommended to the Legislature the passage of a general State Health Law, carefully prepared; and although it was lost by a small majority, the committee in reporting to the State Medical Society in 1867 regarded the attempt as only a temporary defeat, believing (as subsequent events have demonstrated) that the health interests of the State would be a permanent subject of legislative attention. Dr. Hunt at that meeting offered the following:

"*Whereas*, we regard the public health as a matter of vital importance, needing the power of legal enactment as well as the efforts of medical men, therefore,

"*Resolved*, That we hereby express our interest in the attention given to the subject by his Excellency, Governor Ward, in his annual message to the last Legislature of the State, and herewith utter our conviction that there is much need of such legislation as shall secure in city and country a more general regard to well-understood sanitary principles and practices.

"*Resolved*, That the committee on the subject be continued and be requested on our behalf as citizens, no less than as physicians, in such method as they regard best, to commend the subject to executive and legislative consideration."

This was adopted, and at the same meeting Dr. Hunt read a paper in which he made an earnest and eloquent plea in

behalf of the public health. Dr. Hunt reported again at the 1868 annual meeting of the Medical Society, and on his recommendation the following resolutions were adopted :

" That a committee of three be appointed by the Society to examine the registry and returns of vital statistics, and to suggest to the Secretary of State such changes and modifications of tabular arrangement as are possible and desirable.

" That a committee of five on public health shall be appointed, and when so appointed the present committee shall be discharged."

On the latter committee Dr. Hunt was appointed chairman, with Drs. Pennington, Elmer, Cooper, and Wickes.

We note again that at the annual meeting of the State Society, in 1875, Dr. Hunt offered the following :

" *Resolved*, That the prevention of disease so far involves the interests of citizens, as that it should be a subject of legislative consideration.

" *Resolved*, That we do not approve of any action by which health boards are constructed with reference to providing an assortment of physicians of various medical sects. Such citizens as are competent in health matters should be chosen without specification of profession or sect.

" *Resolved*, That any attempt to construct medical boards by legislative enactment of different so-called schools, either for the purpose of medical examinations or for health boards, should not receive the encouragement of any member of this Society."

These resolutions were referred to a committee, who reported them substantially as above given at the next meeting of the Society, and they were adopted.

But not only in the State Medical Society was he active and earnest in the cause of public health, but he was for many years one of the most active and influential members of the American Public Health Association, serving on committees, preparing and presenting papers, and was the President of that Association in 1883.

He was also the originator of the New Jersey Sanitary Association in the year 1874, and was the most active and earnest of its members, serving as its Secretary, and was one year its President. In 1876 Dr. Hunt, then Secretary of this

Association, went to Europe with Surgeon-Major John S. Billings, U. S. A., for the purpose of inspecting hospitals and studying sanitary questions. He returned in January, 1877, profoundly impressed with the sanitary needs of the State. He conferred with Senator George C. Ludlow, of Middlesex, who introduced and supported a bill in the Senate to establish a State Board of Health.

When the State Board of Health was finally formed Dr. Hunt was chosen as, *par excellence*, the man to conduct the work, being made the Secretary of the Board at a very moderate salary. It is with no disparagement of the valuable services of the able President of that Board, and of those associated with him as its members, to say that to Dr. Ezra M. Hunt we owe the wonderful progress that has been made in the cause of public health, which he faithfully and wisely championed with voice and pen, indomitable energy and persistency in spite of physical infirmities. The wisdom he displayed in counselling and shaping legislation in the interest of public health should not be forgotten, for it is largely owing to his conservative, practical, and intelligent management that not only has judicious legislation been procured, but harmful and obstructive legislation prevented, so as to avoid friction and keep this department of the State government free from political manipulation. In a Trenton newspaper, which in political faith was opposed to the doctor's, an editorial article pays this deserved tribute to Dr. Hunt :

"Dr. Hunt, with an intelligence and a zeal phenomenal in one of his delicate health, appealed to the Legislature ; formulated his plans ; forced back by the force of his indomitable spirit the opposition that reform always meets and secured the necessary legislation. Conceded a leadership in these matters, Dr. Hunt's course was a most wise and productive one. He spared no effort and no danger to bring the State in touch with every outbreak of epidemic disease, and not only sought to alleviate existing conditions, but also to enforce the lesson which their presence taught and to prevent a recurrence. As a writer on health matters he was clear, forcible, and convincing, and the reports of the State Board of Health are enriched by many valuable papers emanating from him. . . . He lived to see working efficiently the system which

but for him would not have been organized, and which remains as a monument to his vigor, his fidelity, and his philanthropy."

We believe this expresses the popular judgment. Dr. Hunt was a great reader, he had an excellent memory, and he was a careful, close thinker. He was slow in accepting new theories, he was a seeker after truth, and wished his opinions to be based on facts rather than on mere theories. The writer never knew him to dogmatize or jump at conclusions.

Dr. Hunt was one of the comparatively few public men who have been appreciated for faithful service, gentlemanly bearing, and moral worth, and his ability—especially as a sanitarian—was recognized. He received the degree of LL.D. from Lafayette College, and from Princeton College the degree of Sc.D. In 1888 he was elected an honorary member of the Epidemiological Society of London, England, a degree rarely conferred, and only for original research and eminent ability.

Dr. Hunt always took a deep interest in all the affairs of his native town—Metuchen—although the increasing work of the State Board and his delicate health caused him to change his residence to Trenton during the last ten years. His efforts to collect and preserve data concerning the history of Metuchen led him to prepare two lectures on the subject, which the citizens greatly appreciated and published in a pamphlet, entitled "The History of Metuchen."

He was the author of several medical, sanitary, and religious works. Among them were "The Physician's Counsel" and "The Patient's and Physician's Aid." Many able papers are printed in full or referred to in the Transactions of the Medical Society of New Jersey, of the American Public Health Association, of the State Sanitary Association, and of the State Board of Health.

The secret of Dr. Hunt's life of activity, faithfulness, earnestness, and perseverance is to be found in his deep personal piety and consistent, humble, Christian life—his firm, unwavering faith in God.

He united, when quite young, with the First Presbyterian Church of Metuchen, in which he was for many years—until his removal from the place—a faithful and beloved ruling

elder, and when ten years ago he removed to Trenton he united with the Fourth Presbyterian Church there and later became an elder in that church.

He was an earnest student of the Bible, and several years ago wrote a commentary on the Old and New Testaments, which was published by the Scribners. He also wrote a book on " Grace Culture," published by the Presbyterian Board of Publication. Dr. Hunt was twice married. In 1853 to Miss Emma Ayres, of Rahway. She died in 1867. In 1870 he married Miss Emma Reeve, of Allowaystown, N. J., who, with two sons and one daughter, survives him. One of the sons, Dr. A. C. Hunt, of Metuchen, has been for several years associated with his father in the work of the State Board of Health.

Dr. Hunt made a brave, heroic, long fight with pulmonary consumption, which first attacked him many years ago. He suffered at times with severe hemorrhage or dyspnœa or great physical weakness, yet with his courageous struggle, with the work of the State Board suffering little if any from his long-continued sickness, for he kept his mind on his work, which laid so near and dear to his heart, and he would dictate if he could not himself write or act. There was a patience in suffering, a submission to the Divine will, and a buoyant hope born of an unfaltering trust, that deeply impressed all who had the privilege of knowing him as intimately as the writer knew him.

He at last fell a victim to the disease which he has thus nobly fought, and his cherished wish to die in his old home in his native town was granted, and he passed away peacefully July 1st, 1894, surrounded by his loved and loving ones.

The funeral services were conducted in his former residence —now the home of his elder son, Dr. A. Clark Hunt—by his former pastor, Rev. Dr. J. G. Mason, assisted by Rev. S. A. Harlow, his Trenton pastor, and Bishop Wilson, of Metuchen, and he was buried with his kindred in the old family plot in the Presbyterian Cemetery at Metuchen. D. C. E.

MORTALITY AND MORBILITY STATISTICS.

By Harry Kent Bell, M.D.

Alabama.—Jerome Cochrane, M.D., State Health Officer, Montgomery.

Mobile, 31,076: T. S. Scales, M.D., Health Officer, reports for the month of June a mortality of 85, of which 38 were colored, and 34 were under five years of age. The annual death-rate per 1000 was 33.12.

Zymotic diseases caused 25 deaths, and consumption, 13.

Arkansas.—D. W. Holman, Secretary, Little Rock.

California.—J. R. Laine, M.D., Secretary, Sacramento.

For the month of June the reports from 60 cities, towns, villages, and sanitary districts, aggregating a population of 759,881, show a mortality of 827—a death-rate of 12.96 per 1000 per annum.

There were 148 deaths from consumption, 53 from pneumonia, 26 from bronchitis, 5 from congestion of the lungs, 95 from diseases of the stomach and bowels, 10 from diphtheria and croup, 2 from scarlatina, 9 from whooping-cough, 15 from typhoid-fever, and 3 from *la grippe*.

Reports of prevailing diseases from 32 localities, outside of the larger towns and cities, give 28 cases of pneumonia, 64 of bronchitis, 10 of pleurisy, 10 of congestion of the lungs, 154 of diarrhœa, 51 of dysentery, 26 of cholera morbus, 23 of cholera infantum, 3 of diphtheria and croup, 7 of scarlatina, 27 of measles, 86 of whooping-cough, 29 of *la grippe*, 25 of typhoid-fever, 185 of malarial fevers, 11 of cerebro-spinal-fever, 13 of erysipelas, 64 of rheumatism, 41 of neuralgia, 51 of tonsilitis, and 23 of pharyngitis.

Connecticut.—Professor C. A. Lindsley, M.D., Secretary, New Haven.

The mortality report for June has been received from 167 towns in the State. There were 1001 deaths reported in the

State during the month in a population of 811,843. This was 20 more than in May, and 19 more than in June, 1893, and 94 more than the average number of deaths in June for the five years preceding the present. The death-rate was 15.3 for the large towns; for the small towns 13.2, and 14.7 for the whole State. The deaths from zymotic diseases were 183, being 18.2 per cent. of the total mortality. There were 102 deaths from consumption.

DELAWARE.—E. B. Frazer, Secretary, Wilmington.

DISTRICT OF COLUMBIA, 250,000: W. C. Woodward, M.D., Health Officer—an exchange of places: Dr. William C. Woodward, formerly Coroner for the district, is now its Health Officer, and Dr. C. M. Hammett, who was, until August 1st, Health Officer, is now Coroner.

A proclamation has been issued by the commissioners as follows:

The enormous current consumption of water supplied through the Washington aqueduct impels the commissioners to urge the imperative necessity for economy in its use, and conscientious care to prevent its waste. During the twenty-four hours of June 28th over 49,000,000 gallons, or at the rate of seven barrels a day for each person of the 228,000 estimated users of that water, was delivered from the distributing reservoir.

The prodigality which that fact discloses may unless checked render necessary the placing of the water distribution under a more rigid system of surveillance and restriction. Attention is called to the regulation which permits use of hose-washers and exterior fountains between the hours of 5 A.M. and 8 A.M. and 5 P.M. and 8 P.M. only.

JOHN W. ROSS,
GEORGE TRUESDELL,
CHARLES F. POWELL,
Commissioners of the District of Columbia.

Mortality report for the four weeks ending July 28th, 505, of which number 254 were of colored people, and 244 were under five years of age. The annual death-rate was 24.0 per 1000. There were 170 deaths from zymotic diseases, and 45 from consumption.

FLORIDA.—Joseph Y. Porter, M.D., Secretary, Jacksonville.

The summary, as published in *Florida Health Notes* for the month of May, is as follows :

Number of counties reporting, 45 ; number of cities reporting, 3 ; total population of said counties and cities, 391,422 ; number of births reported, 422 ; number of marriages reported, 415 ; number of deaths reported, 325 ; birth-rate per 1000 per annum, 12.29 ; death-rate per 1000 per annum, 9.95 ; average age of decedents, 26.44 ; number of deaths under five years of age, 115. Deaths from zymotic diseases numbered 68, and from consumption, 44.

ILLINOIS.—J. W. Scott, Secretary, Springfield.

INDIANA.—C. N. Metcalf, M.D., Secretary, Indianapolis.

IOWA.—J. F. Kennedy, M.D., Secretary, Des Moines.

KANSAS.—M. O'Brien, M.D., Secretary, Topeka.

KENTUCKY.—J. N. McCormack, M.D., Secretary, Bowling Green.

LOUISIANA.—W. R. Harnan, M.D., Secretary, New Orleans.

New Orleans, 254,000—184,500 white, 69,500 colored. There were reported for three weeks ending July 14th, 424 deaths, of which number 143 were among the colored people, and 155 of children under five years of age. There were 84 deaths due to zymotic diseases, and 47 to consumption. The annual death-rate was 29.76 per 1000.

MAINE.—A. G. Young, M.D., Secretary, Augusta.

MARYLAND.—James A. Steuart, M.D., Secretary, Baltimore.

Baltimore, 455,427 : James F. McShane, M.D., Commissioner, reports for June that the total deaths were 1021—an

increase of 310, compared with the corresponding month of June, 1893. Of these 756 were whites and 265 colored—a death-rate of 23.36 per 1000 for the former and 44.78 per 1000 for the latter. The death-rate per 1000 for the whole population was 26.92. Twenty-nine died from infectious diseases, 97 from consumption, 36 from pneumonia, 20 from bronchitis, 151 from cholera-infantum, 3 from cholera morbus, 27 from diarrhœa, 13 from dysentery, 38 from enterocolitis, 9 from enteritis, and 40 from gastro-enteritis. Five hundred and forty-three, or 54.18 per cent of the total deaths, were in children under five years of age. During the month 191 cases of infectious diseases were reported, a decrease of 12 compared with the preceding month.

MASSACHUSETTS.—S. W. Abbott, M.D., Secretary, Boston.
Boston, 487,397 : S. H. Durgin, M.D., Chairman.

There were 784 deaths reported in June, of which number 239 were under five years of age. The annual death-rate per 1000 was 18.77. There were 118 deaths from zymotic diseases, and 106 from consumption.

The semi-annual report of the Department of the Board of Health having in charge the infectious diseases shows a large increase of cases over the corresponding six months of last year.

Last year there were 648 cases of diphtheria and 1143 cases of scarlet-fever in the first six months.

This year, in the first six months, there were 1913 cases of diphtheria and 1230 cases of scarlet-fever, a total of 2242 cases, against a total of 1897 for the first six months of last year.

In connection with the increase of infectious diseases, especially diphtheria, the following recommendation by Dr. McCullom is endorsed in this year's report of the Board of Health :

" The manifest importance of a bacteriological investigation as a means of diagnosis in doubtful cases of diphtheria is becoming more and more evident, and of no less importance, as far as the well-being of the community is concerned, is the bacteriological investigation of cases after apparent recovery from diphtheria. It has been considered that in a case of

diphtheria one week after the disappearance of the membrane the patient is no longer a source of danger to the community, but experience has shown that this is not the case, as the germs continue to exist for a much longer time in the throat and in the discharges from the nose. It is therefore important that a bacteriological examination should be made in all cases of apparent recovery from diphtheria. In an endeavor to diminish the prevalence of this disease, the two most important factors are: First, the recognition of mild and doubtful cases; second, the actual disappearance of the special germs of the disease, which can only be recognized by a bacteriological investigation. I would, therefore, recommend that a bacteriological examination be made in all doubtful cases of sore throat, and also in all cases of apparent recovery from diphtheria."

MICHIGAN.—Henry B. Baker, M.D., Secretary, Lansing.

For the month of July, 1894, compared with the preceding month, the prevailing direction of the wind was the same (southwest), the velocity was slightly greater, the temperature was 2.55° higher, the rainfall at Lansing was .36 of an inch less, the absolute and relative humidity and the day and night ozone were less, and the depth of water in the well at Lansing was four inches less.

For the month of July, 1894, compared with the preceding month, cholera morbus and diarrhœa increased, and inflammation of kidney, bronchitis, and scarlet-fever decreased in area of prevalence.

Compared with the average for corresponding months in the eight years 1886–93, the prevailing direction of the wind was the same (southwest), the velocity was 1.4 miles per hour more, the temperature was 2.28° higher, the absolute and relative humidity were less, the day ozone was less, the night ozone was more, and the depth of water in the well at Lansing was the same.

Compared with the average for corresponding months in the eight years 1886-93, intermittent-fever, bronchitis, remittent-fever, cholera morbus, cholera infantum, and dysentery were less prevalent in July, 1894. (No disease was markedly more prevalent.)

Including reports by regular observers and others, consumption was reported present in Michigan in the month of July, 1894, at two hundred and twenty-nine places; scarlet-fever at sixty-four places; measles at forty-three places; typhoid-fever at thirty-eight places; diphtheria at thirty-three places; small-pox at thirteen places, and one case of suspected typhus-fever at Gobleville.

Reports from all sources show measles reported at thirty-eight places less; scarlet-fever at twenty-five places less; diphtheria at fifteen places less; consumption at ten places more, and typhoid-fever at eight places more than in the preceding month; small-pox was reported at the same number of places as in the month of June.

"Nineteenth Annual Report of the Secretary for the Fiscal Year ending June 30th, 1891," a volume of nearly five hundred pages, though tardy in its appearance, is of great historical value to the State and of interest to all sanitarians. Besides comprising the minutes of the proceedings of the Board and the detail of the reports of which abstracts were published contemporaneously in the monthly issues of THE SANITARIAN, it contains papers, abstracts, and special reports on the "Principal Meteorological Conditions in Michigan in 1890;" one on the "Time of Greatest Prevalence of each Disease," being a study of the causes of sickness in Michigan, especially in 1890; one on the dangerous "Communicable Diseases in Michigan in 1890," relating to diphtheria, scarlet-fever, typhoid-fever, small-pox, measles, whooping-cough, consumption, glanders, rabies (hydrophobia), anthrax, actinomycosis (lump-jaw); one on "Cheese Poisoning;" one on "Injuries and Loss of Life and Property from the Use of Kerosene;" one on "Injuries and Loss of Life from the Use of Gasoline," and one on "Alleged Nuisances in Michigan in 1891."

Some of these reports include the immensely extensive and valuable statistics on the subjects of sickness, meteorological conditions, etc., collected at the office of the State Board of Health under the immediate supervision of the secretary.

Detroit, 275,000: Joseph Schulte, M.D., Acting Health Officer, reports for June a mortality of 308, of which 113 were under five years of age. The annual death-rate was 13.66 per 1000. From zymotic diseases there were 52 deaths, and from consumption, 18.

Small-pox.—There have been 26 outbreaks since January 1st, 1894. The average to each outbreak has been only 3.7 cases and 0.9 of one death. In 9 of the 13 outbreaks which are now over the infection was restricted to the one house in which it first occurred.

The 13 deaths out of 37 cases in the 13 outbreaks which are closed are a powerful argument for vaccination and revaccination, because they show that among persons unprotected by vaccination small-pox is still the same deadly and dreadful disease that it has been, the mortality thus far having been 41 per cent.

MINNESOTA.—C. N. Hewitt, M.D., Secretary, Red Wing.

St. Paul, 155,000: H. F. Hoyt, Commissioner. The mortality for June was 124, of which 66 were of children under five years of age. The annual death-rate was 9.60 per 1000. Zymotic diseases caused 24 deaths, and consumption, 5.

MISSISSIPPI.—Wirt Johnson, M.D., Secretary, Jackson.

MISSOURI.—R. C. Atkinson, M.D., Secretary, St. Louis.

NEBRASKA.—F. D. Haldeman, M.D., Secretary, Ord.

NEW HAMPSHIRE.—Irving A. Watson, M.D., Secretary, Concord.

NEW JERSEY.— , M.D., Secretary, Trenton.

Paterson, 95,262: J. L. Leal, M.D., Health Officer. The mortality for June is reported to have been 150, of which 79 were under five years of age. The annual death-rate was 19.15 per 1000. From zymotic diseases there were 33 deaths, and from consumption, 16.

NEW YORK.—J. S. Barnes, M.D., Secretary, Albany.

June has usually the lowest mortality of any month in the year, but the 9800 deaths of the present month exceed the number for May by 500; that of June, 1893 (a month of remarkably low death-rate), by 1000, and of June, 1892, by 700. The average daily mortality was 327, of May 300, and

of June for the past two years 295. From zymotic diseases there were 1790 deaths, or 500 more than in May; but this was more than met by the increased diarrhœal mortality, the customary increase in deaths from this cause being somewhat excessive (200 greater than in June, 1893), but the diarrhœal death-rate of June is variable, being in some years double that of others. The increase is confined to New York and Brooklyn. The deaths from all other zymotic diseases were less than in May. Diphtheria shows the least change, the mortality from it having continued about the same for the past six months, and not less than 200 deaths occurring above the average for June, in which month the mortality usually diminishes. Of the 575 deaths all but 100 occurred in the maritime district. An unusually small mortality from cerebro-spinal-fever is reported. The customary decrease in mortality from consumption has occurred. There were more deaths than usual from diseases of the digestive and nervous systems, an increase noted when the diarrhœal mortality is excessive. There was an unusually large mortality from accidents and violence, largely drowning and railway injuries. From small-pox there were 15 deaths in New York, 8 in Brooklyn, and 1 in Salina, near Syracuse; Newburgh recently reports 2 cases. The average temperature was 2° above the normal, with about 50° variation between the maximum and minimum; the rainfall was about the average; there were few cloudy days, and the prevailing wind, as in May, was southwest.

At a meeting of the State Board at Saratoga, July 31st, complaint was made by the health authorities of the town of Hempstead, L. I., of the garbage that floats ashore at Rockaway Beach, which, they claim, is caused by the scows from New York dumping at high tide and too near the shore. A telegram was sent by Drs. Edson and Edwards, who compose the Committee on Nuisances, to Mayor Gilroy, ordering him to instruct Commissioner Andrews, of New York City, to have the scows dumped on flood or ebb tide at the required distance from the shore.

President Donahue submitted his report on the Riker's Island nuisance, which was accepted and placed on file.

Engineer Schenck presented his report on the pollution of

the water supply of the village of New Rochelle from dwellings and barn sewage. It was referred to Dr. Edson.

A resolution was adopted to divide the State into four sanitary districts, each to have a sanitary superintendent to act in conference with local boards of health. The division lines and the matter of appointing the superintendents was referred to the Executive Committee, who were given full power.

New York, 1,925,562 : Total deaths, 3600—1668 under five years. Death-rate, 22.74. Zymotic diseases per 1000 deaths, from all causes, 235.00. Deaths from consumption, 366.

August 1st a telegram was received from the Secretary of the State Board of Health stating that a quantity of cheese which had been shipped from Afton, N. Y., to a firm on Washington Street, in this city, contained diphtheria germs, and that the firm receiving the cheese had been advised not to place it in the market until an investigation was made.

Chemist Martin was directed to make an immediate investigation. He sent Fruit and Food Inspector Fuller to get samples of the cheese for analysis.

August 6th the Department announced that the bacilli of diphtheria had been discovered in the cheese in question, and by order of the Department the cheese had been destroyed. It is alleged that the farmer who supplied the milk from which the cheese was made had a fatal case of diphtheria in his family, and that, during the sickness, he milked the cows. It is conjectured that he thus transferred the germs to the milk, where they multiplied to reappear in the cheese—There is a great deal of guesswork about all this, and additional evidence is in order.

Brooklyn, 1,012,200 : Total deaths, 2028—972 under five years. Death-rate, 24.25. Zymotic diseases per 1000 deaths from all causes, 240.50. Deaths from consumption, 191.

August 1st sixteen assistant sanitary inspectors were appointed for midsummer work. Before entering upon their duties Commissioner Emery instructed the summer corps in their duties : To visit the tenement-houses and ascertain if there were any sick children without medical attendance, also to report any conditions found detrimental to health, such as defective plumbing or closets, and cellars containing offensive material. In treating sick children the inspectors were cautioned to

ascertain that no physician was in attendance, and to in no way interfere if there was. They were also directed to visit any sick child coming under their care regularly and as long as attention was necessary.

A copy of the code of sanitary ordinances was given each inspector.

With regard to the pollution of the water supply, the Health Commissioner is reported as having refused (August 19th) to give out the latest analysis, but admitted "that the amount of pollution in the water from West Jamaica and Hempstead streams has been very considerably increased since the analyses which were made last spring." Further, the Commissioner said, in recommending that these two streams be cut off from the Brooklyn water supply at once :

"I would not like to predict what would happen in Brooklyn if one or more cases of typhoid or cholera were to develop along the streams. They run through closely settled districts, and are a constant and active menace to the health of the people of Brooklyn."

To a reporter of the New York *Times*, W. S. Johnson, Sanitary Engineer of the Brooklyn Department of Health, who is a new employé, thus describes the sources of pollution along West Jamaica and Hempstead streams :

"West Jamaica stream is not as large as Hempstead stream. It receives the surface and street drainage of the town of Jamaica. There are numerous out-houses within a few feet of its banks. A colony of colored persons lives along the stream. At the head of the stream is a pond used by the ice dealers of Jamaica for gathering ice in winter. In order to keep the ice pure, these men have dug a trench around the pond, thus carrying the pollution into the stream at a point below.

"It is even worse with Hempstead stream, which runs directly through the town of Hempstead. There I found outhouses built directly over the stream. There are numerous outhouses near the water.

"On the occasion of one of my visits to Jamaica stream I saw dead dogs and cats, and one dead hen floating in the water.

"Near the driven wells at this end of the territory of the

water supply there is a large cemetery. There are several cemeteries in the area of the water supply."

These sources of pollution, like many others similar to them, are chronic, owing primarily to the utter carelessness of the people who live in the vicinity of the catch basins of the Brooklyn water supply; and secondarily to the neglect of protective measures by the City Works Department. For a description of the source of the Brooklyn water supply, the reader is referred to the article on "Sanitary Topography," etc., on other pages of this number.

Syracuse, 91,944: Total deaths, 122—33 under five years. Death-rate, 16.00. Zymotic diseases per 1000 deaths from all causes, 90.15. From consumption, 15.

Albany, 98,000: Total deaths, 187—52 under five years. Death-rate, 22.90. Zymotic diseases per 1000 deaths from all causes, 137.50. From consumption, 20.

Buffalo, 300,000: Total deaths, 391—140 under five years. Death-rate, 15.65. Zymotic diseases per 1000 deaths from all causes, 172.00. From consumption, 50.

Rochester, 150,000: Total deaths, 185—43 under five years. Death-rate, 14.80. Zymotic diseases per 1000 deaths from all causes, 75.00. From consumption, 23.

NORTH CAROLINA.—Richard H. Lewis, M.D., Secretary, Raleigh.

From the *Bulletin* of the State Board of Health we find that during June there were 211 deaths in 29 towns, aggregating 146,154 population; 116 were of colored people, and 84 were of children under five years of age.

The annual death-rates were 13.1 per 1000 for the white population, 23.6 for the colored population, and 17.3 for the total. There were 28 deaths from consumption, 14 from typhoid-fever, 4 from pneumonia, and 39 from diarrhœal diseases.

Asheville, 12,000: Total deaths, 13. Annual death-rate, 13.0 per 1000.

Charlotte, 14,000: Total deaths, 34. Annual death-rate, 29.1 per 1000.

Raleigh, 15,000: Total deaths, 35. Annual death-rate, 27.2 per 1000.

Wilmington, 22,000 : Total deaths, 31. Annual death-rate, 16.9 per 1000.

NORTH DAKOTA.—F. H. DeVaux, M.D., Superintendent, Valley City.

OHIO.—C. O. Probst, M.D., Secretary, Columbus.

OKLAHOMA TERRITORY.—J. O. Overton, M.D., Secretary, Kingfisher.

PENNSYLVANIA.—Benjamin Lee, M.D., Secretary, Philadelphia.

Philadelphia, 1,139,457 : M. Veale, Health Officer, reports : In the four weeks ending July 28th there were 2195 deaths, of which number 1150 were under five years of age. Annual death-rate, 26.0 per 1000. Deaths from consumption numbered 172, and from zymotic diseases 688, of which 481 were due to cholera infantum.

Pittsburg, 264,000 : J. Guy McCandless, M.D., Registrar, reports : During the four weeks ending July 28th there were 529 deaths, of which 305 were under five years of age. Annual death-rate, 25.27 per 1000. Zymotic diseases caused 178 deaths, and consumption, 29.

RHODE ISLAND.—Gardner T. Swarts, Secretary, Providence.

SOUTH CAROLINA.—H. D. Frazer, M.D., Secretary, Charleston.

SOUTH DAKOTA.—C. B. Alford, M.D., President, Huron.

TENNESSEE.—J. Berrien Lindsley, M.D., Secretary, Nashville.

The principal diseases, named in the order of their greater prevalence, in the State for the month of June were dysentery, malarial-fever, typhoid-fever, whooping cough, diarrhœa,

consumption, lung diseases, acute mumps, measles, cholera infantum, diphtheria, scarlet-fever, rheumatism, and chicken-pox.

Chattanooga, 40,000 : Total deaths. 35—colored, 18. Annual death-rates per 1000, white, 7.55 ; colored, 16.61 : total, 10.50.

Knoxville, 40,385 : Total deaths, 60—colored, 20. Annual death-rates per 1000, white, 17.25 ; colored, 26.33 : total, 17.82.

Memphis, 57,951 : Total deaths, 119—colored, 75. Annual death-rates per 1000, white, 16.31 ; colored, 35.18 : total, 24.63.

Nashville, 87,754 : Total deaths, 144—colored, 72. Annual death-rates per 1000, white, 15.81 ; colored, 26.05 : total, 19.68.

WASHINGTON.—G. S. Armstrong, M.D., Secretary, Olympia.

WEST VIRGINIA.—N. D. Baker, Secretary, Martinsburg.

WISCONSIN.—U. O. B. Wingate, M.D., Milwaukee.

Milwaukee, 265,000 : W. Kempster, M.D., Commissioner, reports for June a mortality of 329, of which 141 were under five years of age. From zymotic diseases there were 67 deaths, and from consumption, 26. The annual death-rate per 1000 was 14.90.

PROVINCIAL BOARD OF HEALTH OF ONTARIO.—Peter H. Bryce, M.D., Secretary, Toronto.

PROVINCE OF QUEBEC.—Elzear Pelletier, M.D., Secretary, Montreal.

BUENOS AYRES, 580,371 : Albert B. Martinez, Director-General of Municipal Statistics.

During the month of May there were reported 1106 deaths, of which 503 were under five years of age. The annual death-rate per 1000 was 22.1. From epidemic diseases there were 80 deaths, and from consumption, 88.

MORTALITY STATISTICS ABROAD FOR THREE MONTHS ENDING JUNE 30TH, 1894.

Population, total number of deaths, annual death-rates per 1000, and deaths from small-pox :

London, 4,349,166 ; 18,834 ; 17.3 ; 44. Glasgow, 677,883 ; 3403 ; 20.1 ; 4. Manchester, 520,211 ; 2545 ; 19.6 ; 16. Liverpool, 507,230 ; 2876 ; 22.7 ; 1. Birmingham, 492,301 ; 2377 ; 19.3 ; 53. Leeds, 388,761 ; 1590; 16.4. Dublin, 349,594 ; 2025 ; 23.2. Sheffield, 333,922 ; 1377 ; 16.5. Edinburgh, 265,672 ; 1155 ; 17.4 ; 11. Belfast, 265,123 ; 1805 ; 27.2. Bristol, 226,578 ; 510 ; 9.0 ; 1. Bradford, 223,985 ; 880 ; 15.7 ; 4. Nottingham, 223,584 ; 1010 ; 18.1 ; 1. Hull, 212,679 ; 852 ; 16.0. Salford, 205,828 ; 1110 ; 21.6 ; 1. Newcastle, 201,947 ; 931 ; 18.4. Portsmouth, 170,973 ; 521 ; 12.2 ; 4. Norwich, 105,645 ; 434 ; 16.4. Amsterdam, 446,-295 ; 2049 ; 18.4 ; 1. Rotterdam, 228,579 ; 1211 ; 21.2. The Hague, 174,790 ; 757 ; 17.3 ; 158 Paris, 2,424,705 ; 13,146 ; 21.7. Lyons, 438,077 ; 2190 ; 19.9 ; 53. Nantes, 125,029 ; 690 ; 22.1. St. Étienne, 133,443 ; 738 ; 22.1 ; 7. Havre, 116,369 ; 844 ; 29.0. Rouen, 111,847 ; 819 ; 29.3 ; 38. Rheims, 105,408 ; 783 ; 29.7 ; 19. Nice, 97,720 ; 465 ; 19.0. Nancy, 87,875 ; 502 ; 22.9. Amiens, 83,977 ; 434 ; 20.7 ; 5. Grenoble, 60,698 ; 337 ; 22.2. Brussels, 498,400 ; 2098 ; 16.8 ; 8. Besançon, 54,636 ; 339 ; 24.8. Berlin, 1,767,639 ; 7327 ; 16.6. Hamburg, 594,209 ; 2784 ; 18.7. Leipzig, 401,251 ; 1725 ; 17.2 ; 1. Munich, 390,000 ; 2331 ; 24.0 Breslau, 360,660 ; 2301 ; 25.5. Cologne, 311,957 ; 1829 ; 23.5. Dresden, 311,-168 ; 1651 ; 21.2. Magdeburg, 232,846 ; 1217 ; 20 9. Frankfort, 198,238 ; 942 ; 19.0. Königsberg, 169,202 ; 946 ; 22.4. Nuremberg, 162,442 ; 1107 ; 27.3. Chemnitz, 159,117 ; 942 ; 23.7. Altona, 155,393 ; 774 ; 19.9. Düsseldorf, 154,488 ; 707 ; 18.3. Bremen, 139,949 ; 607 ; 17.3. Elberfeld, 137,-853 ; 542 ; 15.7. Stuttgart, 133,338 ; 608 ; 18.2. Stettin, 128,186 ; 763 ; 23.8. Dantzig, 124,305 ; 715 ; 23.0. Crefeld, 116,220 ; 487 ; 16.8. Halle, 115,319 ; 591 ; 20.5. Aix-la-Chapelle, 109,021 ; 589 ; 21.6. Essen, 88,481 ; 463 ; 20.9. Berne, 47,620 ; 240 ; 20.2 ; 4. Basle, 75,114 ; 337 ; 17.9. Geneva, 78,777 ; 408 ; 20.7. Lausanne, 35,623 ; 164 ; 18.4 ; 1. Zurich, 103,271 ; 507 ; 19.6 ; 1. Chaux-de-Fonds, 27,511 ;

124; 18.0. Vienna, 1,465,537; 8819; 24.1; 9. Buda-Pesth, 552,769; 3821; 27.6; 13. Prague, 339,172; 2288; 27.0; 1. Trieste, 159,739; 1125; 28.2; 12. Gratz, 116,475; 815; 28.0. Brünn, 97,411; 749; 30.8; 1. Cracow, 78,183; 683; 34.9; 2. Debreczin, 61,063; 467; 30.6. Presbourg, 57,634; 502; 34.8. Pilsen, 53,499; 319; 23.9. Copenhagen, 341,000; 1653; 19.4. Stockholm, 252,927; 1130; 17.9. Christiania, 161,151; 883; 21.9. Helsingfors, 67,728; 294; 17.4. St. Petersburg, 954,400; 7554; 31.7; 39. Moscow, 753,469; 7109; 37.8; 41. Warsaw, 500,931; 2834; 22.6; 67. Odessa, 324,500; 1624; 20.0; 15. Rome, 450,991; 2033; 18.0; 1. Turin, 335,111; 1534; 18.0; 6. Lisbon, 242,297; 1983; 32.7; 22. Bucharest, 206,000; 1553; 30.2. Cairo, 353,188; 4983; 56.4; 6. Alexandria, 181,703; 2137; 47.0; 10. Damiette, 43,502; 385; 35.4. Suez and Ismailia, 12,406; 170; 54.8. Port Said, 10,693; 158; 59.1.

TYPHOID-FEVER RECORDS.—According to an abstract of a recent report on the relation of typhoid-fever to foul water at Lawrence, Mass., submitted to a joint water commission representing the Chamber of Commerce, of Pittsburg, as published in the Pittsburg *Dispatch*, July 25th, 1894, the average mortality from typhoid-fever per 1000 inhabitants in different localities has been as follows: Allegheny, Pa., 12.74; Lawrence, Mass., 12.72; Lowell, Mass., 10.60; Washington, D. C., 7.67; Pittsburg, Pa., 6.71; Fall River, Mass., 6.40; Philadelphia, Pa., 6.32; Holyoke, Mass., 6.13; St. Paul, Minn., 6.10; Minneapolis, Minn., 5.96; Cincinnati, O., 5.79; Pittsburg, 5.44; St. Louis, Mo., 4.86; Nashua, N. H., 4.77; Baltimore, 4.55; Salford, 4.50; Baltimore, 3.90; Concord, N. H., 3.88; Paris, 3.70; Haverhill, Mass., 3.63; Newburyport, Mass., 3.60; Boston, Mass., 3.10; Manchester, N. H., 2.95; New York, 2.50; 27 provincial towns, 2.30; Lynn, Mass., 2.24; Brooklyn, N. Y., 2.10; Omaha, Neb., 1.40; London, Mich., 1.37; Birmingham, Eng., 1.28; Berlin, Ger., 1.28; Vienna, Austria, 1.11; Bristol, Eng., 0.90.

The average mortality from typhoid-fever per 1000 inhabitants for the last four years has been, in Philadelphia, 52; San Francisco, 41; Boston, 34; New York, 21; Brooklyn, 20.

MEDICAL EXCERPT.

By T. P. CORBALLY, A.M., M.D.

THE SIGNS OF HEART FAILURE IN FEVERS.—M. Huchard has made an important statement to the Société Médicale des Hôpitaux (*La France Médicale*, July 13th) regarding the signs of heart failure, which, he thinks, should not be limited exclusively to the determination of the weakening or the disappearance of the first sound. There are, besides this weakening, two other symptoms, which he has observed; these he has named the "embryocardiac" and the "bradydiastoliac," or prolongation of the cardiac diastole. This last symptom was studied some time previously by M. Huchard as a new prognostic symptom in diseases of the heart. He insists upon these facts, and advances proofs to support their correctness, and to show that there are often great errors committed in the diagnosis of acute myocarditis in fevers, and especially in typhoid-fever. In this disease the autopsies he has made have proved to him satisfactorily that often, in very grave symptoms of heart trouble, there were hardly any appreciable lesions of the muscular constituents of the heart, and reciprocally. On the other hand, there may often appear in cardiac sclerosis considerable myocardiac lesions and that, even while life may last for a great length of time.

In emphasizing these conditions, the results of his personal observations and of the previous observations of Bernheim, of Nancy, in 1882, he has shown that many of the symptoms attributed to myocarditis of typhoid-fever must be referred to the effect of functional disturbance, or to lesions of the cardiac nervous system.

In all these cases it is certain that the symptoms of myocarditis of infectious conditions, admitted by the greater number of authors, do not exactly reproduce those which he has studied since 1870, with Desnos, in cases of variola. This latter disease may produce myocarditis; typhoid-fever causes myocarditis with cardiac nervous troubles, which exert a preponderating influence, and the *grippe*, which resembles typhoid

in this respect, as determining myocarditis, but causes other disturbances of cardiac innervation which he studied four years ago (*Soc. Méd. des Hôpit.*, 1890, *et Bul. Med.*, 1892), long before Sampson, of London, who has made a report on the subject to the Medical Society of that city.

These researches and these considerations have a great practical importance ; they show clearly that the poison of typhoid acts on the heart like digitalis ; this agent should not be employed indiscriminately in the treatment of a case of typhoid-fever complicated with cardiac symptoms. Injections of caffeine, of ergotine, and even cold baths should be employed in preference.

M. Hayem described, in 1886, symptomatic myolitis, after having examined the hearts of a great number of patients who had died from varioloid and from typhoid-fever. He attributed the alterations of the muscles to changes in the blood and in the blood vessels. Myocarditis is much more marked in typhoid-fever than in variola, which is contrary to the statement of M. Huchard. Sometimes even a vitreous degeneration of the muscular fibres is found in typhoid, a condition which does not exist in variola. It is difficult to attribute death to alterations of the muscular fibres, for it seems due rather to a toxhæmic condition, the effects of which are directed as much to the vessels as to the muscles and the nerves of the heart and other organs.

M. Siredey has also found that myocarditis was more frequent in typhoid-fever than in variola. In typhoid, the changes in the heart are often limited to the arteries.

M. Huchard has, on the contrary, always observed that the fibres in myocarditis were much more deeply changed in variola than in typhoid. The following consideration goes to prove that in typhoid the nervous element should be added to the myelitic. In proportion as sudden deaths are relatively frequent in the cardiac complications of typhoid-fever, they are rare in variola. If the cause of death is of equal force in the two affections, why are the results so different ?

VIEUSSENS—A HISTORICAL CORRECTION.—M. Huchard presented to the Société Médicale an interesting historical fact (*La France Médicale*, July 13th, 1894) which he found in

examining the works of Vieussens, proving that he was the first to observe the aortic insufficiency as early as 1715, and also the resulting irregularity of the pulse, which has been since credited to Corrigan, so that his observations long preceded those of the latter, whose description appeared in 1832.

CYANOSIS AND INVERSION OF THE VISCERA.—M. Barié presented to the Société des Hôpitaux (*La France Médicale*, July 13th, 1894) a patient twenty-eight years of age, without any hereditary history. Since childhood this man has had dyspnœa, and presented all the signs of cyanosis, which conditions have caused him to be regarded as suffering from heart disease. Besides, the cyanosis, or blue disease, he has a complete inversion of the viscera; the point of the heart beats plainly on the right side, while the liver is on the left; . . . a systolic murmur is heard on the right side above the apex, which is transmitted to the back and into the axilla.

CANCER OF THE STOMACH.—Two remarkably successful operations for the removal of cancer of the stomach, which were reported to the Academy of Medicine, one by M. Quénu, the other by M. Tuffier, are given in the *Gazette Hebdomadaire* of July 15th, 1894, as follows:

"In the case of M. Quénu the operation was performed with the instrument of Murphy. The patient was presented to the Academy in excellent health six days after the operation.

"'The patient, a female, whom I now present to you in good health,' said M. Quénu, 'had suffered from gastric troubles for about six months, attended with complete gastric intolerance of the blandest substances, accompanied with excruciating pain and great loss of flesh.

"'It was, most probably, a case of cancer, and to confirm the diagnosis, I made, on April 16th last, an explorative laparotomy, and fifteen days later I operated again.

"'In this second operation I at first effected anastomosis of the anterior face of the stomach with the jejunum by means of the instrument of Murphy; then, applying two forceps—*pinces*—on the stomach, I divided the tissues between them, removed the tumor, shaved the upper part of the pancreas,

and cut out the upper part of the duodenum, having previously placed two forceps in position. The solution of continuity in the stomach and in the duodenum were closed separately.

"'This operation lasted an hour and fifty minutes; the succedanea of the operation were simple. Eighteen days afterward the patient arose; she gained in flesh nine kilogrammes; she eats well, suffers no pain, and has regained all her strength.

"'The histological examination of the tumor confirmed the existence of an epithelioma of the stomach.'

"*Second Case.*—The operation in M. Tuffier's case was also a pylorectomy, but in this instance the duodenum was united to the stomach. The operation performed was a simple pylorectomy; the success was complete and lasting, as it is now eight months since it was performed. The patient, who is fifty years of age, experienced for the first time in April, 1892, gastric troubles, characterized by transient pains, lancinating in the epigastrium, and by almost incessant vomiting of food. In October, 1893, the patient was extremely emaciated and cachectic. A tumor was distinctly felt in the epigastric region, nearly in the median line; the tumor was round, hard, movable transversely; the outlines were well defined and about the size of an orange.

"The seat of the tumor and the accompanying dilatation of the stomach indicated a cancer in the pyloric region.

"'On November 21st,' says M. Tuffier, 'I performed the following operation after median laparotomy, and having determined that the tumor occupied the pyloric region without encroaching on the pylorus, and that there was no generalization of the disease, neither in the ganglia nor in the neighboring viscera, I drew out the stomach with the parts attached and isolated the serous membrane by means of sterilized compresses. Two long forceps were applied over the stomach, one above and the other below the tumor, then the gastric segment thus isolated was divided and separated from the adjacent parts, from the great omentum and from the gastrohepatic omentum.

"'After having contracted the section on the side of the larger curve by suturing mucus to mucus with catgut, and serous to serous membrane with silk, so as to make a circumference for the upper part of the incision nearly equal to that

in the pyloric region, I placed the two circumferences, gastric and pyloric, in apposition and united them with a double peritoneal suture, then by a muco-serous suture.

" ' The results of the operation were without complication, and from the fifteenth day after the operation the patient resumed the ordinary use of food.

" ' The fact that I have been able to follow this case for eight months, and that the patient is now in perfect health, her weight having increased ten kilogrammes since the operation, gives it additional interest.' "

CONTRACTION OF THE PYLORUS.—M. Tuffier has presented this present week, July 15th, to the Surgical Society another patient on whom he has performed a gastro-enterostomy for a fibrous contraction of the pylorus, the patient being at the time in a condition of extreme cachexia. The operation was performed in March last, and since that time he has gained fifteen kilogrammes in weight.

CHOLECYSTOTOMY FOR BILIARY OBSTRUCTION.—M. Fontan, of Toulon, has lately presented to the Academy (*Gazette Hebdomadaire*) the history of a very interesting operation for obstruction of the biliary vesicle by calculi, in a person who had suffered with jaundice, which had resisted all rational means of relief.

After an abdominal incision the biliary vesicle was sutured to the abdominal wound and incised. More than thirty calculi were removed from the vesicle, then catherization was performed to remove from the cystic and biliary canals any obstruction that might remain.

At the same time that the biliary ducts were catherized they were injected with ether, with the intention of dissolving any portions of the calculi that might still obstruct them. These injections were very well borne by the patient; the bile returned into the vesicle. There remains now as the result of the operation only a fistulous opening, which will be closed in a short time.

"At the present time," says M. Fontan, "the biliary circulation continues satisfactory; the tissues have regained their natural color, the appetite has returned, the strength is excellent.

The emaciation and the jaundice have disappeared, and all the conditions lead to the conviction that in a few weeks it will be possible to close the fistula."

SPONTANEOUS GANGRENE OF THE LIMBS.—M. Panas recently presented the following report to the Académie de Médecine (*La France Médicale*, June 8th): M. X——, thirty-five years of age, temperament nervous, whose father suffered unusually from attacks of gout, and died of heart disease. Of the six brothers and sisters, three are as nervous as the patient.

The pains began six years ago and were complicated with red spots on the left lower limb; soon two phlyctenular spots appeared, and these gave place later to black gangrenous spots. Since that time the pains have remained excessively severe and were very persistent, and nothing was found to give any relief. The gangrene reached the toes and extended so that amputation of the left leg at the junction of the middle and upper third became necessary. The pains, far from being removed, continued as severe as before the operation. No rest could be obtained from any of the remedies used except from salicylate of soda.

The most important phenomenon in connection with the amputation was the entire absence of hemorrhage. At the end of twenty days all was healed.

The arteries were examined. Both the arteries and the deep veins were very much reduced in size without any obstructing clots. Histologically the lesions consisted of a proliferation of the endothelial sheaths of the vessels, and the same condition was found in the veins. It was an endovascular inflammation, probably of a nervous origin, caused by the pain which during six years had preceded the gangrene. The nerves were equally changed.

In assuming the nervous origin of the gangrene there is nothing stronger than hypothesis to support such a cause for the lesion. From the histological examination, the vessels appear to have been first diseased. The disease seems to have progressed from the periphery to the centre. It was, indeed, a general affection of the vascular system.

As antecedents there was neither syphilis nor alcoholism, nor, indeed, any other appreciable cause for the gangrene.

M. Verneuil urged the fact that the history of surgical gangrene is as yet surrounded with complete obscurity.

M. Laborde at this point remarked that aconite is really a specific for neuralgias of the trigemini. It acts within twenty-four hours in the dose of a quarter of a milligramme of aconitin crystals every five hours.

M. Laveran: "The observation of M. Panas presents a very strong analogy to a case of my own, the difference being that, in my patient, the gangrene invaded successively both the lower limbs. In both cases there was a general endoarteritis. But in my case there was no lesion of the nervous system; I think it was primarily a disease of the vascular system. In my patient the pains disappeared completely after the amputation. The prognosis, however, seemed to me to be very unsatisfactory, because it had its origin in a disease which probably was the result of paludism."

M. Verneuil recalled the fact that, together with M. L. H. Petit, he had previously called attention to the malarial origin of gangrene.

M. Fournier: "The arterial lesion is the mechanism, it is the manner, but the why, the wherefore escapes us completely. In the case of which M. Panas has spoken I have sought with the greatest of care for syphilis, either acquired or hereditary, and I have not found any. I have seen, however, a young man otherwise quite well, who, in the early months of syphilitic affection, had gangrene for which it was necessary to perform an amputation. The salicylate of soda has proved an excellent sedative for the accompanying pain, and it is specially successful in the lightning pains of the tabetic."

LISTERINE, in doses of five to fifteen drops in sweetened water, is an admirable condiment in infantile diarrhœa, or adjuvant to aperient medicines, when they are required in infantile disorders of any kind. And as a mouth wash and gargle, for sore mouth, sore throat, or fœtid breath, we take pleasure in commending it to both physicians and dentists as the most efficient as well as the most agreeable remedy we know of.

EDITOR'S TABLE.

SANITARIAN, SEPTEMBER NUMBER, 1894.

☞ ALL correspondence and exchanges and all publications for review should be addressed to the Editor, DR. A. N. BELL, Brooklyn, N. Y.

SANITARY DISTINCTIONS AND SUGGESTIVE CONCLUSIONS.

DR. JOHN S. BILLINGS has recently made a comparison of the death-rates of Boston and Philadelphia, indicating in some measure the causes which operate to make a city healthful or otherwise, in substance as follows:

The first feature of this comparison which attracts attention is the larger average annual death-rate in Boston. The rule is that the larger the city the higher the death-rate. Yet here is Boston, with less than half a million inhabitants, whose death-rate during the six years before the last census averaged 23.59; while Philadelphia, with a population exceeding a million, shows a death-rate of only 21.86 as the average of the same period. There is the further consideration, making this difference appear yet more remarkable, that the proportion of colored population—among whom the death-rate is higher than among whites—was twice as great in Philadelphia as in Boston. And there is yet another apparent advantage on the side of Boston in the possession of a better and purer water supply. Although Philadelphia uses one hundred and eleven gallons of water daily per head of its population, while Boston uses only eighty-nine gallons, the Boston supply is the freest from pollution, as the figures for typhoid-fever indicate.

What, then, is the cause of the greater rate of mortality in Boston? Dr. Billings reaches the conclusion "that the persistently higher death-rate in Boston as compared with that of Philadelphia for the last twenty years has been due mainly to diseases of the lungs, and more especially to consumption and pneumonia, and that this excessive fatality from these diseases is due, to a considerable extent, to the race characteristics and density of the population. The density of population affects the death-rates from diseases of this kind, partly because it increases the liability to contract diseases

from infected houses, but mainly through the poverty, ignorance, uncleanliness, and alcoholic habits which characterize the majority of the tenement-house class."

Setting aside the predisposition of persons of the Irish race toward diseases of the respiratory organs, which is a misfortune to be overcome only by the slow change in constitution which nature may produce in generations, it then appears that density of population is the chief remediable cause of the higher comparative death-rate in Boston. To remove this cause is to reach the apparent evil as nearly as it can be reached.

It is the overcrowding which must be brought to an end. In Boston there are less than 53,000 dwellings; in Philadelphia there are more than 187,000. In Boston the average number of persons in a dwelling is 8.52; in Philadelphia it is only 5.60— that is, in Philadelphia the great majority of families are supplied each with a separate house, and this is an immense sanitary advantage. Dr. Billings says that "the man who lives in his own house in Boston has as long an expectation of life for himself and his family as the man under similar circumstances in Philadelphia, since the specially unfavorable sanitary conditions in the former city affect chiefly the tenement-house population, and can only be improved by municipal action tending to scatter and disperse that population, which action probably cannot now be taken in that city." All that he looks for is remedial action applied to existing conditions.

"The causes of disease and death which the health authorities of Boston can probably attack with the most hope of good results," he says, "are consumption and pneumonia, and this is to be done largely by educating the class most affected by these diseases as to the comparatively simple measures required to check their spread, and by aiding in the thorough disinfection of houses, rooms, clothing and bedding infected by their germs."

THE PROPER STERILIZATION OF MILK consists in *warming* it to a temperature of 160° F., *not boiling* it. Boiling it renders it indigestible and unfit for babies. It is easy for any intelligent person to sterilize it effectually by merely pouring

the milk into a clean and previously scalded bottle, stopping it with a wad of cotton, and placing it in a pail containing enough water to keep it upright, and putting it over the stove or range. Hang a thermometer to the handle of the pail, so that the bulb may sink into the water without touching the bottom, and when the mercury rises to 160° remove the pail. Leave the bottle of milk standing in it for ten minutes. It should then be taken out, corked, and cooled, and used within twenty-four hours. It may be kept longer and still be sweet, but it is far better to be on the safe side—sterilize a fresh supply daily.

No matter how fresh cows milk may be, for babies it should always be sterilized. A large percentage of cows from which the milk supply is procured are tuberculous, and as the bacilli of this disease may be killed and rendered harmless by subjecting them to a temperature of 160° in the manner described, it should always be done. Moreover, milk is particularly prone to contamination with disease germs from outside sources—by uncleanliness in milking, exposure to foul surroundings during milking, unclean utensils, the addition of impure water, and by various accidents, against all which sterilization is effectually protective, and therefore should not be neglected.

LAW REQUIRING LOCAL BOARD OF HEALTH IN THE STATE OF NEW YORK.

AN Act to amend the public health law relating to local boards of health. Became a law April 5th, 1894, with the approval of the Governor. Passed, three fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Section 20 of the public health law is hereby amended to read as follows:

SEC. 20. Local boards of health.—There shall continue to be local boards of health and health officers in the several cities, villages, and towns of the State. In the cities except New York, Brooklyn, Buffalo, Albany and Yonkers, the board shall consist of the mayor of the city, who shall be its president, and at least six other persons, one of whom shall be a competent physician, who shall be appointed by the common

council, upon the nomination of the mayor, and shall hold office for three years. Appointments of members of such boards shall be made for such shorter terms as at any time may be necessary, in order that the terms of two appointed members shall expire annually. The board shall appoint a competent physician, not one of its members, to be the health officer of the city. In villages the board shall consist of not less than three nor more than seven persons, not trustees of the village, who shall be appointed by such trustees annually and hold office for one year. Every such village board shall elect a president, and appoint a competent physician, not a member of the board, to be the health officer of the village. In towns the board of health shall consist of the town board and another citizen of the town of full age, annually appointed by the town board at a meeting to be held by it within thirty days after the annual town meeting. Such board of health shall annually appoint a competent physician, resident of the town, to be the health officer of the town; or in case there be no competent physician residing in the town who will accept such office, such board of health shall annually appoint a competent physician residing in a neighboring town or city to be the health officer of the town. If the proper authorities shall not fill any vacancies occurring in any local board within thirty days after the happening of such vacancy, the county judge or the county shall appoint a competent person to fill the vacancy for the unexpired term, which appointment shall be immediately filed in the office of the county clerk. Notice of the membership and organization of every local board of health shall be forthwith given by such board to the State Board of Health. The term "municipality," when used in this article, means the city, village, or town for which any such local board may be or is appointed.

SEC. 2. This act shall take effect immediately.

STATE OF NEW YORK,
Office of the Secretary of State, } *ss.:*

I have compared the preceding with the original law on file in this office and do hereby certify that the same is a correct transcript therefrom and of the whole of said original law.

JOHN PALMER,
Secretary of State.

NEW BOOKS AND BOOK REVIEWS.

ANY BOOK reviewed or advertised in THE SANITARIAN costing $1.50 or less will be sent *free* to any present subscriber sending the name of a new subscriber, or to any new subscriber on receipt of the full subscription price sent on his own account; or any book so reviewed or advertised costing more than $1.50 will be sent at a discount of that amount.

SMALL HOSPITALS, ESTABLISHMENT AND MAINTENANCE, by A. WORCESTER, A.M., M.D.; AND SUGGESTIONS FOR HOSPITAL ARCHITECTURE, WITH PLANS FOR A SMALL HOSPITAL, by WILLIAM ATKINSON, Architect. 12mo, cloth, $1.25. New York: John Wiley & Sons.

How to build and how to manage hospitals, in small communities particularly, are living questions to every community. This little book so answers these questions as to be of interest to all who are engaged in these eminently needful purposes.

In Part I. full directions are given for inaugurating the hospital and for arranging its management.

In Part II. is given a set of admirable plans for building a small hospital, together with a most useful chapter upon hospital construction.

While thoroughly up to date and embodying all the underlying principles of hospital establishment and maintenance, the book is not too technical for the general reader.

DOUBLE CONSCIOUSNESS. By ALFRED BENET. Half number. 12mo, paper, 15 cents. Chicago: The Open Court Publishing Co.

THE NATURE OF THE STATE. By PAUL CARUS. 12mo, paper, 25 cents. Chicago: The Open Court Publishing Co.

Both these little books are of the "Religion of Science Library Series," comprising respectively the concentration of extensive knowledge in the smallest space. The authors are alike distinguished for their discernment and use of facts by

whomsoever brought out or to whatsoever purpose, primarily, for the elucidation of their own work in hand ; and their power of concentration in this regard not only intensifies interest in what they write, but inspires a desire to pursue the subject. Of Ribot, it is said introductively, he has little love for great systems of anything, but that he rightly gives precedence to little facts, accurately observed and minutely described. It was by use of these that he laid the foundation of physiological psychology in the study of hypnotism. Double consciousness under other conditions is shown by the aggregation of little facts culled afield, as in hysterical individuals, where it is most easily demonstrated. " As a result of numerous observations it is now a well-known fact that with excitable individuals every idea produces in the body unconscious movements, which at times are so precise and clear, that by registering them we are able to guess at the person's thoughts. The method of the experiment is frequently the following : The individual is asked to think of a word, a number, or any object whatsoever, and at the same time a pen is thrust into his hand with the assurance that his thoughts will be divined. It frequently happens then that the person, although not feeling any movement in his hand, will spontaneously write the word that he has thought of. This experiment affords an elementary instance of the operation known as thought-reading, and we at once understand how any clever experimentalist may be able to dispense with the use of the pen, and to guess at a man's thoughts by simple contact with the hand."

" The Nature of the State" is a deduction from a study of the nature of strikers illustrated by strikes. It is a chain of editorial articles that have appeared in *The Open Court* on strikers and strikes, linked into an essay which begins with the questions, " Does the State Exist ?" " What is a State ?" " What Difference Obtains between Society and the State ?" " Is Not the State a Tyrannical Institution which Must be Abolished ?" " What is the Nature of the State ?" All defined in nine words : " The organization of the common will of the people." And then follows some speculation on and about *the* people, the few who have, and the many, it may be, who have not expressed their will, and the perhaps still more numerous body of people who have no will at all on the sub-

ject, who, like a horde of wild animals, possess a community of interest comparable to the mere instincts of animal life. Rather too scrappy to be useful, and some of its illustrations, taken from the revolutionary experiences of other states and nations, too far-fetched to point the essay.

WHERE TO SEND PATIENTS ABROAD FOR MINERAL AND OTHER WATER CURES AND CLIMATIC TREATMENT. By Dr. THOMAS LINN, Doctor of Medicine, Faculty of Paris; of Medicine and Surgery, University of New York; Member of British Medical Association, of Anglo-American Medical Society, de la Société de Médecine Pratique de Paris, etc. 12mo, pp. 76, 25 cents. (The Physicians' Leisure Library Series.) George S. Davis, Detroit, Mich.

The first condition with regard to the use of any remedy for disease is knowledge of its properties. Mineral waters are *medicine*—medicine, ordinarily, in such a form as to be accessible to all who seek it, with or without the advice of a physician; too often on the inducement of some advertising proprietor, who neither knows nor cares about any other results than those which may accrue to his pecuniary interest; hence the need of competent advice.

It is a great mistake that some people—even some doctors—make in the use of mineral water of any kind, that it may be taken *ad libitum*, the more the better, even of such as are chemically indifferent—those which contain no characteristic constituent. Above all is their excessive use dangerous in disease of the kidneys, upon whose functions the whole organism depends in sickness, as in health, for the disposal of all excess of liquids. Diseased kidneys require rest, not overwork. Indeed, the therapeutic value of mineral waters cannot be appreciated without a knowledge of their properties. To use them indiscriminately, without such knowledge and without reference to the condition of the kidneys, is to hazard the health of the person so doing.

This little volume before us is a safe guide for those who would understand the value of the mineral waters and sanitary resorts of Europe, with which the author has made himself familiar by actual observation. It is alike commendable to physicians and invalids who would profit by such knowledge.

TRANSACTIONS OF THE NEW HAMPSHIRE MEDICAL SOCIETY, 1893, G. P. Conn, M.D., Secretary, Concord, N. H. A pamphlet of 180 pages, comprising the Minutes; Essays on Pulmonary Tuberculosis—E. O. Otis, M.D.; Sequela of Grippe—W. H. Aldrich, M.D.; Appendicitis—I. J. Prout, M.D.; Some of the Uses of Cocaine—Henry Dodge, M.D.; On the Use of the Forceps—Bradford Allen, M.D.; Some Remarks on Hypnotism—Dixi Crosby, M.D.; Address to the Graduating Class of Dartmouth Medical College—Edward French, M.D.; discussions and reports of committees and a list of the Fellows: all of interest to medical practitioners, and the essay on pulmonary tuberculosis, with special reference to its prophylaxis, hygienic and climatic treatment, in particular, to sanitarians.

REPORT OF THE LUNACY COMMISSION OF MARYLAND FOR 1893. William Lee, M.D., Secretary. A pamphlet of 60 pages.

While the Commission felicitates the people on the great advancements made in the care and treatment of the insane, feeble-minded, and idiotic, and practically much during the past year, it urges the need of a reformatory institution for tramps, bummers, moral weaklings and chronic inebriates; and a still greater need—a home for epileptics. The mingling of insane criminals with the virtuous is lamented, and relief for this practice asked for. A vicious practice of committing the insane to penal institutions by magistrates is commented on and measures for its prevention recommended.

The number of the insane now in the different institutions for them, including almshouses, is 3150 who come within the lunacy act; about 1800 of these being indigent cases. As far as ascertainable there are 400 insane who are unprovided with hospital accommodations. Of the 3150, 550 are colored, and most of these are without special care. The increase among the colored insane for the year has been 50.

Appended to the report are two essays, one by Dr. William Lee, Secretary of the Lunacy Commission, on the "Advancement in the Care and Treatment of Insane in Maryland during the past Eight Years, and Insanity in the Colored Race." Among the many reforms effected, that of the entire separa-

tion of the sexes and doing away with mechanical restraint have been most prominent. Of the colored insane: since the Civil War insanity among the colored race is greatly on the increase—attributed to the engendered trials and cares hitherto unknown to them while in bondage, and added to this the fact that by nature they lead very exposed lives and are as a class very immoral and dissipated.

The other essay is on "Some Facts and Suggestions Concerning the Care and Treatment of the Insane in Maryland," by George J. Preston, M.D., Professor of Physiology and Nervous Diseases, College of Physicians and Surgeons, Baltimore It reviews the interest in public affairs, particularly in almshouses and hospitals, taken by the medical and chirurgical faculty of Maryland for more than a hundred years, and the benefit of it; urges State care for all the insane and improvements for their care substantially the same as those urged by the Lunacy Commission.

THE SCHOOL POPULATION OF THE UNITED STATES in 1890, reckoning the school age between five and twenty inclusive, was in round numbers 22,590,000. The average annual increase for the preceding ten years was about 413,000. Supposing this proportion of increase to have been maintained during the past three years, the school population to-day should be in the neighborhood of 23,700,000; it is more probably 24,000,000. Of these about 3,000,000 are Roman Catholics, and 21,000,000 are Protestants. The total enrolment in Protestant Sunday-schools in 1893 was a little over 11,000,000, including teachers and adult scholars. About one fourth were over twenty-one, leaving the Protestant Sunday-school enrolment of the school population in the neighborhood of 8,300,000. Deduct 8,300,000 from 21,000,000, and we have an army of 12,700,000 Protestant young persons of school age outside of the Sabbath-school. Add a similar proportion from the Roman Catholic school population, and the total swells up to 14,500,000. What are the churches doing to bring these young people into the Sabbath-school? Through various denominational and undenominational agencies the Protestant Church brought in during the past three years a yearly average of 397,097 enrolled members, teachers, and

scholars of all ages. Deduct one fourth of these as being over twenty-one, and we have an average annual increase of 297,823 from the school population into our Protestant Sabbath-schools.

THE NEW SCIENCE REVIEW—A MISCELLANY OF MODERN THOUGHT AND DISCOVERY, is a welcome addition to our exchange list. A quarterly of 128 pp.; the first number, July 1st, 1894. $2 per annum. J. M. Stoddart, *New Science Review*, 147 North Tenth Street, Philadelphia, Pa.

The purpose of this periodical, as self-stated, is to supplement other scientific periodicals, not to supersede them. Those address themselves to the specialist, this to the public at large—does not assume that the reader already has an esoteric acquaintance with the matter in hand, and starts from that standpoint, but supplies him with a standpoint; it explains before it demonstrates. Thus it occupies a position midway between the ponderous scientific journals and the lighter magazines. It is as valuable as the first, as interesting as the latter; but it conflicts with none—it has a distinct individuality.

The contents of this first number are a wholesome beginning: The Mystery of the Ice Age and its Solution, by Major-General A. W. Drayson, F.R.A.S.; Diamonds and Gold, by Major F. I. Ricarde-Seaver, F.R.S.; Thomas Paine and the Republic of the World, by Moncure D. Conway, A.M.; A Newton of the Mind (the propeller of Keeley's air ship described), by Julian Hawthorne; The Problem of the Pole, by Charles Morris; The Canals of Commerce, by Professor Lewis M. Haupt; Nikola Tesla and his Works, by Lieutenant F. Jarvis Patten; New Violins for Old, by Edward Heron-Allen; The Great Duke of Marlborough, by Sidney James Low; The Rights and Wrongs of Toadstools, by Charles McIlvaine; Queries in Literature: Why do Certain Works of Fiction Succeed? by Marrion Wilcox; Current Scientific Discussion, by Professor Angelo Heilprin.

PUBLICATIONS RECEIVED.

An Economical System of Sanitary Drainage. M. Nadiein, Captain of the Russian Army, Chicago.

Results in Ninety Cases of Tuberculosis. Karl von Ruck, M.D., Asheville, N. C.

Pulmonary Tuberculosis, with Especial Reference to its Prophylaxis, Hygienic and Climatic Treatment. Edward O. Otis, M.D., Boston, Mass.

Agricultural Reports. Cornell University, Experiment Station, Ithaca, N. Y.

Production of Manure. *Bulletin* 56. *Ibid.*

Raspberries and Blackberries. *Bulletin* 57. *Ibid.*

Four-Lined Leap-Bug. *Bulletin* 58. *Ibid.*

Milching. *Bulletin* 59. *Ibid.*

The Spraying of Orchards. *Bulletin* 60. *Ibid.*

Artesian Wells. Oscar C. S. Carter, Philadelphia.

Liquor Sedans, San Palmetto, Damiana, Pichi, and Stylosanthes Elatior. J. J. Caldwell, M.D., Baltimore, Md.

Death from Nitrous Oxide Gas. Frank J. Thombury, M.D., New York.

Tricuspid Insufficiency. *Ibid.*

Medical Reports on Valentine's Meat-Juice as a Nutrient in Influenza and its Sequelæ. Mann S. Valentine, Richmond, Va.

Necessity of Special Institutions for the Consumptive Poor. H. Longstreet Taylor, M.D., St. Paul, Minn.

The Prevention of Tuberculosis in Ontario. E. Herbert Adams, M.D., Toronto.

Alveolar Abscess. *Ibid.*

Renal Derangements, Use of Lithiated Hydrangea in. Lambert Pharmacal Co., St. Louis, Mo.

Absorption of Immature Cataract, with Restoration of Vision. J. Hobert Egbery, M.D., St. Louis, Mo.

New Method of Artificial Respiration in Asphyxia Neonatorum. J. Harvey Dew, M.D., New York.

Gangrenous Cholecystitis. Lucius W. Hotchkiss, M.D., New York.

Heredity : its Relationship to Mental Disorders. Dr. Alexander L. Hogdon, Baltimore, Md.

Recent Electro-Therapeutic Work. Dr. G. Betton Massey, Philadelphia, Pa.

A Consideration of the Cause of Typhoid-fever in Chicago. O. N. Huff, M.D., Chicago, Ill.

The Water Supply of Chicago : its Source and Sanitary Aspects. Arthur R. Reynolds, M.D., Commissioner of Health, Chicago ; and Allen Hazen, S.B., Chemist, Chicago.

Report of Two Years' Work in Abdominal Surgery. Charles P. Noble, M.D., Philadelphia, Pa.

Relations of Urinary Conditions to Gynæcological Surgery. *Ibid.*

The Causation of the Diseases of Women. *Ibid.*

Report of a Year's Work in Minor Gynæcology. *Ibid.*

Radical Cure of Inguinal Hernia. Samuel E. Milliken, M.D., New York.

Therapeutic Reflections a Plea for Physiological Remedies. Simon Baruch, M.D., New York.

Proceedings of the New York Veterinary Medical Association.

NOTES AND NOTICES.

THE UNIVERSAL DISEASE OF THE MODERN CITY.—The existence in our great cities of masses of unemployed or half-employed workers is admitted to be a national danger, and the question how to deal with them to be the most urgent and difficult political problem of the day. If modern civilization is destined to be swept away, this is the class which is most likely to act the part which the barbarians did toward the Roman Empire. In the organized trades the inevitable want of work in slack times or in the intervals between the close of one job and the beginning of another is dealt with by the unions. The worker, for the time out of employment, is subsidized out of the common fund ; he was formerly helped to find work by being provided with the means to

travel about in search of it; now the more rational mode is adopted of indicating to him, by means of information supplied by the branches of the union, the particular place in which work is likely to be found; his distress and difficulty are thus reduced to a minimum. But in the unorganized trades, which I cannot often enough impress upon the reader contain the vast majority of the workers, the malady of want of work rages unchecked. Invention of machinery and changes of fashion are continually swelling the ranks of the "unskilled" with workers whose skill is no longer wanted. Competition and the demand of the public for the cheapest article have produced the great sweated industries of East London, the cabinet trade, and the ready-made clothing trades, in which thousands of people work at barely subsistence wages. That this mass of half-starved, half-employed workers is a national danger no one will deny. It exists in American and Australian cities as well, where one would have thought the abundant virgin soil afforded an inexhaustible outlet for surplus population. It seems a universal disease of the modern city.—*From "English Workmen and Their Political Friends," by the Right Hon. Sir John E. Gorst, M.P., in North American Review for August.*

"INDIA is a congeries of nations which, although mixed up together in a bewildering degree, and undergoing a rapid fusion in their superficial aspects under British rule, are yet so widely different from each other that generalizations are apt to be delusive and misleading. Yet there are some characteristics of these peoples which must strike even the traveller, while everywhere the English resident finds qualities to admire and esteem. The uniform high standard of good temper and good manners of the Indian, his industry and frugality, his sobriety and temperance in diet, his zeal and faithfulness in duty, his patience in sickness and in tending the sick, the ability and learning of the more intelligent races, their domestic virtues, especially their kindness to children, the self-denial of the bread-winner to save for his often distant family, their endurance of hardship, and the splendid courage of the best of the fighting classes; above all, perhaps, the gratitude shown for kindness, and the regard manifested

for individuals among their foreign and transient rulers who have so acted as to deserve it—a regard continued long after there is anything to be gained by showing it : these are some of the most striking qualities of the Indian peoples."—*From "India : The Political Outlook," by General Sir George Chesney.*

"We were told that the native foreman—the headman in an establishment where some fifteen hundred hands are employed (in an opium factory)—receives 11 rupees a month, the rupee at the present rate of exchange being worth 1*s.* 4*d.* The wages for the working hands range from a penny a day for children to fourpence, as a maximum, for men. The wages of agricultural laborers in this part of India (Patna) do not exceed 2 annas, or a little more than twopence a day. Even in the neighborhood of Calcutta, at the large and admirably equipped Canning jute mills, which we visited, and where from three to four thousand hands are employed, the wages range from twopence to fourpence a day. We are told that the natives are able to live, according to their mode of existence, on this miserable poor pay. Every member of a family earns wages and contributes to the common fund. Many of the cultivators possess a little patch of their own. Their dwellings are of the most rudimentary description, consisting of tiniest huts, made of bamboo and matting. They have little need of fuel. Their clothing consists entirely of cotton cloth. Their food is millet, their drink water.

"We saw a splendid Sikh regiment on parade at Delhi. In physique and martial bearing the men were equal to our Foot Guards. They are drawn from a solid class of small yeoman-farmers. The pay of a native infantry soldier is 7 rupees a month, and for this small sum he finds his provisions and all his undress kit. The native army is a marvellously cheap force, and their officers believe that the men may be trusted to stand by us as long as we are able to show a bold front to the enemy. They feel the prestige which belongs to a government sustained, as ours has thus far been, through every difficulty and trial which we have had to encounter. None can say what the native soldier might do in case of serious reverses. He may help us to avert, he might not help us to retrieve disaster."—*From "A Recent Run to the East," by the Right Hon. Lord Brassey, Nineteenth Century for June.*

THE RECENT RAILROAD STRIKE is the chief topic of editorial discussion in the *Review of Reviews* for August. The motives of the dispute are candidly considered, and the conclusion is reached that the leaders of the American Railway Union have done great harm to the cause of organized labor, besides inflicting untold injury on an innocent public. At the same time the opinion is advanced that arbitration would have been greatly to the advantage, as well as credit, of the Pullman Company.

Yet, in Mr. Pullman's behalf, it is said that this consent to arbitration, if due at all, was due to the general public as a graceful act rather than to the strikers.

WALKING AS A PASTIME.—Eugene Lamb Richards writes a paper in the August number of the *Century* on "Walking as a Pastime." He thinks this is one of the most interesting, healthful, and economical ways of spending a vacation, and he gives a number of valuable hints to those who have had little experience in tramping. Mr. Richards says:

"This mode of travel, besides being independent, has other advantages. No great preparations are needed for a trip. A vacation of a few days can be utilized by a man's swinging his pack on his back, and going off into the country. Owing to the continual change of abiding-place, in three days, it often seems as if the traveller had been absent a week.

"Another advantage is the light expense. In all other travelling trips the cost of mere locomotion is a great item. By walking, the change from place to place is made without paying any railroad or steamship fares, without paying any expressman or hackman, and without any of those unavoidable expenses which often make the cost of a trip a matter of anxious thought.

"The greatest advantage is the tonic effect on the body and mind. This is due to the freedom from care, and to the natural life—the continual exercise in the open air, which stimulates the appetite, and causes a great demand for food. The amount of food consumed on one of these trips is generally three times what is taken at home. The stimulating action on the skin, by the constant flushing of the pores in consequence of the exercise, and the baths required to keep

one clean, bring into a state of healthy activity a part of one's system generally neglected by those living sedentary lives. In the coldest winter weather I often find, on closing a day's tramp, that my undergarments are wet with perspiration. Then, too, fatigue brings good sleep. Thus, with exercise, good food, free perspiration in fresh air, and plenty of sleep, a man takes nature's best tonics.

"It must not be supposed that these tramps exercise only the legs and feet. If one carries a pack, the upper part of the body, and especially the muscles which hold the shoulder blades, are thoroughly exercised. The back and the abdomen come in for their share, so that when the trip is over, and one goes about without his pack, it is not very hard to walk erect."

RAIN-MAKING.—Now as to the possibility of producing rain by artificial means. It is never safe to say what things are possible and what things are impossible to man. What the future may bring forth no one can tell. At the present time, however, there is no evidence to show that even the smallest local shower has been produced artificially. Further than that it is safe to say that no method of producing artificial rain has yet been publicly proposed which suggests to one familiar with the scientific principles involved even a possibility of success. That such attempts have received the official recognition and the financial support of Congress is only another evidence of the gross ignorance of scientific principles which is prevalent among our so-called educated men. That some of the men who advocate these wild schemes are honest in their motives cannot be questioned, but that all the professional rain-makers are conscienceless fakirs is scarcely more questionable. That many of them are able to submit testimony as to the efficacy of their system is equally true of every patent-medicine fraud and electric-healing quack who has ever swindled an ignorant public.—*Professor Fernando Sanford, in The Popular Science Monthly for August.*

PUFF-BALLS AS FOOD.—It will surprise many to know that the plebeian puff-ball of our pastures is good for something besides old-fashioned styptic, smoke, and the kick of the small boy.

There are a number of species of the puff-ball, varying in shape and size from the small white globular variety of an inch in diameter, and the pear-shaped, to the giant pasture species which may attain the dimensions of a football. All are edible, if gathered at the white stage, those of yellow or darker fracture being excluded. Of the esculent qualities of the larger species, *Lycoperdon giganteum*, we may judge from the statement of a connoisseur. "Sliced and seasoned in butter and salt, and fried in the pan, no French omelet is half as good in richness and delicacy of flavor." M. C. Cooke, the British authority, says of it, "In its young and pulpy condition it is excellent eating, and indeed has but few competitors for the place of honor at the table."—*From "A Few Edible Toadstools and Mushrooms," by W. Hamilton Gibson, in Harper's Magazine for August.*

A POLAR BEARS' PARADISE.—The favorite food of the polar bear is the flesh of seals, sea-lions, walruses, fish, and dead whales. Of all seal-hunters, he is the most successful. Instead of being obliged to stalk his game on the ice, in plain sight, he can hunt like a crocodile. He takes to the water, swims slowly up, with only his nostrils and eyes at the surface, and before the seal, watching landward, is aware of his danger, his clumsy body is fairly within the hungry jaws of the "tiger of the ice," as Dr. Kane called him.

But, strange as it may appear, the polar bear does not live by flesh alone. In their Alaskan travels, Mr. Henry W. Elliott and Lieutenant Maynard once chanced to visit St. Matthew Island, a lonely bit of land in Behring Sea, about half-way between the strait and the Aleutian Archipelago. There they found between 250 and 300 polar bears, basking in the warm lap of summer, shedding their winter coats, lazily eating and sleeping, and growing fat on the roots of the small flowering-plants and mosses that abounded. As the explorers' boat approached the shore, a score of bears were in sight at one time. The bears literally possessed the island, "grazing and rooting about like hogs in a common." In spite of their numbers they could not be induced to fight, but always ran when approached, either in "a swift, shambling gallop, or trotting off like elephants." They were fond

of sleeping in the sun on sheltered hillsides "soundly, but fitfully," says Mr. Elliott, "rolling their heavy arms and legs about as they dozed." After shooting half a dozen specimens in the tamest manner, the two explorers decided to kill no more; for, by reason of shedding, their furry coats were worthless. One that was shot by Lieutenant Maynard measured exactly eight feet in length of head and body together, and its weight was estimated at between 1000 and 1200 pounds. —*W. T. Hornaday, in July St. Nicholas.*

LITTELL'S LIVING AGE.

OFFICE OF LITTELL'S LIVING AGE,
31 Bedford Street, P. O. Box 5206,
BOSTON, August 1, 1894.

To the Editor of THE SANITARIAN.

DEAR SIR: A statement is going the rounds of the papers, in an obituary of Mr. T. H. Carter, that "with Mr. Littell as editor he brought out *The Living Age.*"

Mr. Littell, as editor and proprietor, employed Mr. Carter to *print The Living Age*, and also, for a short time, to *publish* it. But the implication in the above quotation that *The Living Age* owes its existence to Mr. Carter, any more than to the paper-maker, compositor, stereotyper or binder, is entirely without foundation.

Yours very truly,

LITTELL & CO.

AN IMPORTANT NEW BOOK just announced is "Practical Urinalysis and Urinary Diagnosis." A manual for the use of practitioners and students, with numerous illustrations, including colored photo-engravings. By Charles W. Purdy, M.D., of Chicago, author of "Bright's Disease and Allied Affections of the Kidneys," "Diabetes: Its Causes, Symptoms, and Treatment," etc. A one-volume practical and systematic work of about 350 crown-octavo pages, in two parts, subdivided into twelve sections, and an appendix. The F. A. Davis Company, 1914 and 1916 Cherry Street, Philadelphia.

HIS FIRST CASE.—The young man had just been admitted to practise at the bar. He sat within the bar enclosure, speculating upon the chances of clients coming to him, by mistake or otherwise. He heard his name spoken, and started to his feet.

"Mr. De Novo, the prisoner at the bar is unable to employ counsel. Will you defend him?"

"Certainly, your Honor. May I retire with him to the bar office for a few moments' consultation?"

"Yes, sir; and give him your best advice."

A hardly perceptible sneer curled his Honor's lips as he uttered these last words, but the young man did not appear to notice it. Motioning for the prisoner to follow him, he passed into the other room. The door was closed, and for ten minutes the lively clatter of many conversations filled the court-room. Then the young man strolled into the room and dropped into a chair. The crier proclaimed, "Silence in the court-room!" His Honor gazed upon the young man and said:

"Are you ready to proceed?"

"Yes, your Honor."

"Where's the prisoner?"

"I really don't know."

"What?"

"I'm sure I don't know."

"Mr. De Novo, will you explain what you mean by this most extraordinary conduct?"

"Your Honor told me to give him the best advice I could, I believe?"

"Yes, sir."

"May it please the court, when I consulted him I found he was guilty, and had really no defence whatever. So, in pursuance of your Honor's so kindly meant suggestion, I advised him to drop out of the window and make himself as scarce as possible. I presume, in fact I know, that he followed the first part of my advice, and I believe he will also observe the rest of it."

The prisoner that was is still at large.—*From the "Editor's Drawer," in Harper's Magazine for July.*

THE SANITARIAN.

OCTOBER, 1894.

NUMBER 299.

YELLOW-FEVER THE AMERICAN PLAGUE—THOROUGH DRAINAGE AND MUNICIPAL CLEANLINESS THE ONLY MEANS OF INSURING ITS EXTINCTION.*

By J. C. LE HARDY, M.D., Savannah, Ga.

WHEN the great West opened its portals to the world, the capital which had been invested in the construction of the Pacific Railway, etc., was so great and the territory to be settled so immense, that extraordinary methods had to be resorted to in order to turn the current of immigration in that direction. Therefore lands were given away, passage money was furnished or advanced, numberless agents were sent to every part of Europe and Asia to advertise the West and to enlist recruits. The two hemispheres were flooded with "Western literature," wherein facts were clothed in such garbs as suited the purpose best. The pictures of Western scenery were all *couleur de rose*, while those of other sections were not very attractive. The South—a rival most to be dreaded—was made to appear as little better than the infernal regions. Its sun was wasting hot; its climate so sickly and its people (fire-eaters) so reckless that human life was in constant danger. The success of this enterprise was most wonderful. People from every corner of the world soon flocked westward to fill this "Land of Promise." Cities sprang up everywhere, many of them growing to huge proportions; railways were constructed in every direction until a complete network was formed. The influx became so great that the native Indian had to be forced from his hunting grounds in order to make

* Read before the Congress of Immigration, at Augusta, Ga., June 1st, 1894.

way for the surging mass. Soon it became necessary to check this wholesale immigration in order to protect the inhabitants against want. The Chinese were first placed under the ban; this was followed by other restrictions; but the West has been overloaded, and the surplus has been forced to make its way Eastward in search of bread and money. Southern States need not, therefore, fear competition from that quarter; on the contrary, many of the better class of Westerners may be induced to come and bide with us—if we invite them do so.

Time, the Civil War, the abolition of slavery, facility of communication, cheap travel, and common interests have done a great deal to bring about the intermingling of the people of the Northern and Western States with those of the South; to bury the old distrust and that fear of personal danger in the South which existed in former years, and replace them with good-will and fellowship.

You have met here to-day for the purpose of inviting immigration to the Southern States; and you will not find it difficult to demonstrate the many advantages which the Southern States offer to immigrants. The mildness of the climate and the wonderful productiveness of the soil will enable them to live cheaper in the South than they can in the North, where artificial heat is required nearly half the time. It is also in your power to show that many millions of willing hands can find remunerative employment in the South; some in preparing the growth of our immense forests for the markets of the world, others in bringing to light and utilizing treasures now buried in our inexhaustible mineral beds. Hundreds of thousands of families can find steady and remunerative occupation in the cultivation of cotton, of rice, of tobacco, of sugar-cane, of fruits and vegetables, and in the raising of horses, cattle, swine and other domestic animals, and in many other ways.

But, in order to succeed in bringing the current of immigration through Southern ports, it will be necessary to prove that yellow-fever is fast disappearing from the country; that it is no longer the terrible disease which, for political purposes, the advocates of a national quarantine system have pictured it; but, on the contrary, a preventable disease, and

that it should never prevail again as an epidemic on the Southern coast.

The dread of yellow-fever is so great, that the mere mention of it strikes the great mass of our people with terror. The occurrence of a single case sufficed to depopulate Brunswick last year; and the same dread affects the minds of foreigners and retards emigration to the Southern States. In the hope of removing this fear, and of showing that yellow-fever should not be an obstacle to emigration, I have prepared the following brief history of that disease and of the means which have been successfully used for its extinction:

Three hundred years ago the name "yellow-fever" was for the first time given on this continent to an epidemic disease then raging in Boston, Mass. Since that time (1693) the same yellow-fever has occurred in at least one hundred years at one point or another, or at many points on the Atlantic and Gulf coasts. As this is the only pestilential disease of which a full record has been made in America since that date (barring the Asiatic cholera, which first appeared in 1832), it is reasonable to suppose that the "plague" spoken of by early writers, and which killed so many of the aborigines in times long before the European invasion, was one and the same disease. What other fever but malignant yellow-fever could have destroyed two thirds of the followers of Columbus, in 1494, while upon the island of Hispaniola, West Indies? The fearful loss of life among Spanish adventurers and Spanish troops which in the succeeding years landed upon these islands and the continent was undoubtedly caused by some climatic disease called "pestilential fever" by Torquemda, the Spanish writer and historian. He says that in 1415 Mexico lost 800,000 lives by that fever. To this day yellow-fever is called "plague" in South American States subject to its visitations. Between 1790–1822 yellow-fever occurred in the United States in thirty-seven different years in one or in several cities at the North, while it was almost unknown at the South. From 1781–1810 the loss of life from yellow-fever North was fully 20,000, while at the South it was barely 1000 during the same period. After this date, however, while Boston, Providence, Salem, Portsmouth, Hartford, New London, New York, Baltimore, and other cities North had already rid themselves of

the causes producing the disease, the yellow-fever infection was spreading at a rapid rate, and the loss of life became fearful all along the South Atlantic and Gulf coasts. Between 1845–55 this fever attained its highest degree of virulence in the United States. The death-rate was appalling, reaching at times 35 to 40 per cent of the cases. Southern cities lost fully 40,000 lives by it, of which more than 25,000 were lost in New Orleans alone. The Norfolk epidemic in 1855 seems to have been the turning-point. From that date the type of the disease became milder and milder, and the mortality has diminished with every epidemic, the last of which appeared in Brunswick last year with a mortality of about 50 from August 12th to December 1st in a population of 5000.

While not a single serious epidemic of yellow-fever occurred in the United States between 1855–76, the disease continued to appear in its sporadic or epidemic form here and there upon our coast. During the Civil War, when our ports were blockaded by the enemy's squadrons, and our commercial relations by sea and land were almost entirely cut off, yellow-fever occurred in Wilmington, Smithville, Beaufort, N. C. ; at Charleston, Hilton Head, and Beaufort, S. C. ; in Savannah, Ga. ; on board ship in the river opposite New Orleans ; at Key West, Galveston, etc. The first epidemic of any magnitude subsequent to the war occurred in 1876. That year Savannah and Brunswick, Ga., were infected. Fully 10,000 of the inhabitants of Savannah suffered with the disease ; of these 896 died. Brunswick's loss of life was 176. In 1877 it appeared as an epidemic in Fernandina and other points upon the coast of Florida, doing very little damage ; but in 1878 the infection extended far and wide along the valley of the Mississippi River and along some of its tributaries. The number of persons who suffered with the fever during this epidemic was estimated at 150,000 ; the loss of life, 10,000, of whom 4531 died in New Orleans, and in Memphis 5150. This appears to have been its last great throe ; for while the disease continued to appear almost every year since in Louisiana, Texas, Mississippi, Florida, or Georgia, the mortality has been insignificant.

The lives of millions upon millions of human beings, the prosperity or happiness of great nations, often " hang upon a

thread ;" the misinterpretation or perversion of a single word has brought about some of the most terrific wars. To what are all the misery and dissatisfaction among the working classes, the great bulk of mankind, due, if not to the misapplication of the word "protection"? To a mere difference of opinion relative to the "cause and origin" of two preventable diseases, Europe owes the continuance of the plague (black death) for twenty-five centuries, and the loss of more than 25,000,000 lives, and America a continuance of yellow-fever (black vomit) for three hundred years, with a loss of nearly 150,000 lives.

Long before the Christian era it had already been ascertained that *uncleanliness*—the accumulation of filth in the soil, and its saturation with water in the presence of long-continued solar heat—was necessary for the production of the plague. Those who believed in the local origin of the plague advised the removal of the cause as the only preventive. At that period the plague was epidemic—that is to say, it recurred every year at some of the Mediterranean ports of North Africa. Cases were constantly brought over into European ports, and occasionally the disease would become epidemic and spread in every direction. This caused many physicians and others to believe that it was an imported disease ; that local causes had nothing to do with its production ; and that it was contagious —that is, spread from one person to another by contact. Measures to prevent its introduction and spread were therefore instituted by those in authority. Isolation and segregation of cases were resorted to ; the burning of herbs, incense, etc. ; the destruction by fire of bedding, clothing, and of houses were all resorted to in the hope of checking the progress of the dreaded black death. Having completely failed in these attempts, quarantine was inaugurated and its rules enforced with the utmost rigor. No vessels from the coast of Africa were allowed to come near to land. They were compelled to remain at anchor for forty days or longer, absolutely without communication. Any attempt on the part of passengers or crew to come ashore was punished with death. This rigid quarantine against the plague was kept up for centuries, but it had no perceptible influence upon the disease, which kept up its periodical visitations over the European

continent, causing a fearful loss of life, the death-rate ranging from 50 to 80 per cent of the stricken.

The city of London, where "bills of mortality" were issued, lost 36,000 lives by the plague in the year 1603; 11,785 in 1609; 35,417 in 1625. The loss in 1636–37 was 13,482, and 3597 in 1647; while in 1664 the mortality reached 68,596 in a population of 400,000. One short year after this fearful epidemic, called "the great plague of London," a conflagration swept away every habitation upon a space covering 450 acres in the very heart of the city. Terrible as this calamity was, it proved to be a blessing in disguise. In rebuilding the burned district the streets were made much wider, the houses more spacious, and the air space between them much greater; streets were kept clean and the filth removed. This great metropolis has ever since been exempt from the plague. Not only did London profit by these sanitary measures, but the whole civilized world was benefited thereby. Once convinced of the good effects of sanitation, the heads of governments and municipal authorities in Western Europe strove to furnish the inhabitants of cities subject to the plague a greater supply of fresh air, more and purer water. Sewers were built and the soil drained, filth was removed or destroyed as best they could. The effect was soon apparent. The plague disappeared from Western Europe in the early part of the eighteenth century, while its visitations were as frequent as ever in Eastern Europe, Asia, and Northern Africa, where hygienic measures had not been resorted to. The last epidemic occurred in Constantinople in 1841, and the last outbreak on the European Continent originated on the Volga in 1878 and 1879, causing a panic throughout Europe. Every year we still hear of its occurrence in Persia, Hindostan, and China, where the habits of the people are filthy beyond measure, and sanitation is unknown.

Strange as it may seem, in America quarantine was enforced against yellow-fever long before it was known by that name. "Information having reached the colony of Massachusetts Bay that the plague, or like grievous infectious disease, had raged exceedingly in the Barbadoes and other islands of the West Indies," an order from the General Court was issued in the first month (March), 1647 or 1648: "Vessels shall stop

and come to anchor outside of the Boston Harbor." Here I transcribe part of an act passed in the province of Massachusetts in 1722, which will give an idea of the severity of the quarantine regulations at that period :

"SECTION 1. That every ship or vessel shall, before they unload any goods or part of their cargo, be obliged to perform quarantine at least forty days after arrival at such places as shall be assigned for that purpose. Any master or commander of such ships or vessels who shall presume to unload before he has performed such quarantine, or refuse to perform quarantine, shall be deemed a felon, and suffer the pains of death."

Charleston, S. C., was perhaps the second port in which quarantine was enforced shortly after the epidemic of 1696. A few years later (1728) it was established in Philadelphia and in New York (1758). There is not a single port upon the Atlantic and Gulf coasts subject to yellow-fever where a quarantine has not been kept up for years. Was not a quarantine enforced from 1793–1807 when yellow-fever became endemic in New York, Philadelphia, and Charleston? The records of those cities show that it was, and that its regulations were rigid and heartless as those of the Mediterranean ports when the plague was raging. Although the effects of quarantine had always been detrimental to commerce, and the great majority of physicians who had much experience with yellow-fever had no confidence in quarantine as a protective measure, the faith of the people in it was so great that it had to be kept up. During the period between 1855 and 1876, however, it was practically abandoned. Physicians and sanitarians met in convention in Philadelphia, New York, and Boston to discuss that important question. The result of their labor was a very valuable report ; in this report it is declared that quarantine as a protection against the recurrence of yellow-fever in this country is useless. Did any bad results follow this abandonment of quarantine? None whatever! On the contrary, during the time mentioned, the number of cases and the mortality from yellow-fever was less than it had been since 1781 in the United States in the same interval of time. And yet it was during this very period that the plans for a revival of quarantine were laid. In 1870–72 politicians and

others in and out of Congress, thinking that a central bureau with power to regulate and enforce quarantine South could be used not only as a powerful political engine, but also as a means to divert Southern commerce to Northern ports, united in an effort to establish such a one in Washington. During its session in 1872 Congress passed a joint resolution "providing for a more effective system of quarantine on the Southern and Gulf coasts." The yellow-fever epidemic of 1876 in Savannah gave these partisans the first opportunity to get through Congress an act "to prevent the introduction of contagious and infectious diseases in the United States." The first attempt made to create a central bureau of quarantine as an appendage to the Marine Hospital Service failed. In its place Congress created a national board of health. This board inaugurated national quarantine stations along our coasts as a sure preventive. But the yellow-fever did come, nevertheless, and the Board of Health, which had been too extravagant, was left to die by starvation; but its powers were relegated to the Marine Hospital Service, under whose charge quarantine has been worked for all it is worth. To the existing maritime inter-State quarantine was added. This gave it control over travel. Then came inland quarantine, with its *cordons sanitaire*, armed guards, camps, fumigation, and other paraphernalia too numerous to mention. Finally the control and management of epidemics was given by Congress to the same service, and an appropriation of $1,000,000 was made. The powers conferred by Congress upon the head of the Quarantine Bureau are despotic; they are even greater than those assumed by a general in times of war. This was fully illustrated in Brunswick last year, when an epidemic-fever occurred called yellow-fever, causing a mortality of 54 (?) persons in a population of 5000. During the three months of its prevalence the people of the infected districts were held as prisoners by armed guards, and within a radius of at least one hundred miles no one dared to leave home without a written passport from the health authorities. Persons presuming to travel without this permit were hounded down, and, if caught, were sent to a pest-house, to the national quarantine station, or turned loose in the woods; and yet with all this power behind it, quarantine has failed to prevent

the recurrence of yellow-fever. It has failed to stamp out epidemics, and it has also failed to prevent its spread in infected districts.

Ever since 1882, when the Marine Hospital was put in charge of quarantine on the Rio Grande and at Pensacola, outbreaks of yellow-fever have occurred in Alabama, Mississippi, Louisiana, Florida, and Texas almost every year. Therefore quarantine has proved as much a failure against the incursions of yellow-fever in America as it did in Europe against the plague. I will now point out what means were used to bring about the extinction of this dread disease in cities hitherto subjected to its depradations.

On February 13th, 1799, the General Court of the commonwealth of Massachusetts passed an act entitled "An act to empower the inhabitants of Boston to choose a board of health, and for removing and preventing nuisances in said town." A board of health was immediately created which did clean the streets and remove nuisances from the city, but having been put in charge of the quarantine, they made new regulations and enforced them, hoping to prevent the return of yellow-fever; but in 1802, and again in 1805, the disease did return. Then this Board of Health devoted its attention particularly to sanitary measures. The streets and yards were regularly cleaned, low land was drained and transformed into magnificent truck farms, gardens, nurseries, etc. While this work was going on, a few cases of yellow-fever occurred near the town docks and along some of the wharves, but did not spread anywhere else. After suffering severely from epidemic yellow-fever in 1794, 1798, 1800, and 1819, the municipal authorities of Baltimore, by advice of the Medical Society, drained the low, swampy and filthy lands near Fell's Point, where the yellow-fever always started; they also removed the filth from the city more thoroughly, and they discarded the quarantine restrictions which had existed until then. The Monumental City evidently owes her exemption from yellow-fever to these measures. New York had ten epidemics between 1791 and 1822, five of which recurred five years in succession. A board of health was created, but an interval occurred in which yellow-fever did not return, and very little sanitary work was accomplished during that period. In 1819,

however, the fever was epidemic again, and by order of the Board all the poor in the infected district, 150 in number, were removed to Fort Richmond, on Staten Island. All those who sickened while there died of yellow-fever; and although the inmates were crowded together, the disease did not spread. When the next epidemic occurred, in 1822, they depopulated the infected district and cleaned every part of the same. The powers of the Board of Health were now extended, larger appropriations were made, and sanitary work was done in every corner of the city. The wharves and the river were overhauled, the low places were drained and filled, sewers were built, and this work has been kept up and improved upon ever since, with the result of greatly decreasing the mortality, and preventing the recurrence of epidemic yellow-fever, although cases of the disease are brought into the city almost every year.

Philadelphia suffered more and longer from the incursions of the yellow-fever than any other Northern city. This was the field on which the partisans of "the local origin" and the "foreign origin" of yellow-fever fought their battles; the result being that no thorough measure was ever undertaken until 1854, the year after the last visitation of the plague. Then important sanitary works were at last carried out. The sewer system was remodelled, the river was dredged, the wharves, the drainage inside and outside of the city carefully looked after. The filth was removed in a systematic way, and purer water was provided with the happiest results.

Charleston, S. C., where quarantine has been kept up continuously and very rigidly ever since 1696, has had at least 63 recurrences of yellow-fever. The most disastrous epidemic occurred in 1858, while the city was fully protected by as strict a quarantine as the Health Officer (an old army officer) could enforce. Having had two visitations of yellow-fever during the war, while their port was under strict blockade, caused the authorities to lose faith in quarantine, and to resort to other means for protection. Sewers were built, low places were filled, the streets were paved and kept clean, the low lands around the city were drained, and strawberry culture was started. A supply of pure water (artesian) replaced cistern water. The scavenger wagon replaced the buzzard, and 1871

marks the last outbreak of yellow-fever in the city by the sea. There is perhaps no other city upon our Atlantic and Gulf coast where the immediate effect of cleanliness in stopping yellow-fever has been better illustrated than in New Orleans. Built upon a plane below the high-water mark on the banks of the Mississippi River, the soil is necessarily saturated, and no attention having been given to sanitary measures, it soon became one of the filthiest and sickliest cities in the land. In consequence it has been visited by yellow-fever 36 times in the last seventy-seven years, with a loss of life fully one third of that sustained by the United States during the same period. Here quarantine was tried and given up in disgust, and again tried, all to no purpose. Every effort to save the city from the pestilence failed. During the early part of the Civil War, and while in the hands of the enemy, she was cleaned as thoroughly as possible under military rule; and while other cities on the coast had the yellow-fever, New Orleans escaped, notwithstanding the fact that cases originated in the river opposite the city on board ship. The disease did not reappear until 1867—the city having again been permitted to relapse into its former filthy condition, and the yellow-fever to its former habits. Immediately after the terrible epidemic of 1878 a citizens' sanitary association was organized which furnished the money to remove the accumulated filth. The scavenger system was remodelled, steam pumps were used to empty the drains into the lake. Burials within the city were forbidden, and to this day the Southern metropolis has had no yellow-fever epidemic, although sporadic cases have occurred on several occasions since.

Now, if New Orleans, in her unhealthy situation and with so many difficulties in the way to secure either subsoil drainage or an efficient system of house drainage, has been able to prevent yellow-fever epidemics by the systematic removal of filth and surface water, there is certainly no valid reasons why any city in the southern latitudes should be allowed to remain in the condition necessary to create or to propagate yellow-fever.

If the money spent by the State governments and municipalities for quarantine purposes had been used for permanent sanitary works; if the general Government had used the

money spent for quarantine service and for epidemic purposes in the thorough drainage of sea-ports, yellow-fever as an epidemic would have disappeared long ago from Southern cities as it has done at the North and the world over, wherever a sufficient amount of money has been spent for sanitary work. If Congress, instead of giving quarantine officers power to squander money by the million, and trample upon the personal liberties of American citizens, would employ skilled engineers and sanitarians instead, and spend those millions in improving the sanitary condition of filthy ports, our commerce need never again be impeded by the detention of ships at quarantine. As soon as international laws are made and properly enforced, which will secure cleanliness and free ventilation aboard ship, and that hospitals for the treatment of the sick and the detention of the infected will be provided, neither the plague, cholera, typhus, yellow-fever, nor even small-pox need ever be feared in this country.

PROCEEDINGS OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION—ELEVENTH ANNUAL MEETING.*

FOURTH DAY, JUNE 1ST, 1894.

DR. ROLAND S. CURTIN in the chair.

The proceedings opened with a paper by Dr. Guy Hinsdale, of Philadelphia, entitled "The Comparative Rarity of Phthisis in the Highlands of Pennsylvania and the Adjacent Counties of New York."

If a physician were asked to name a district most free from phthisis in New England or the State of New York, he probably would name the Adirondacks. He wished to draw attention to a region shown on the several maps before the meeting—a region in Pennsylvania and New York measuring

* Concluded from page 200.

12,000 square miles, where the death-rate from phthisis was 1 in 1091 persons living. He described the highlands in the counties, and said as the maritime tier of counties in New York is approached there is an increasing death-rate. The region in Pennsylvania and New York—being that under consideration—was high up. It had a population of 62 per square mile—largely an agricultural section ; an excellent locality, having elevation and an equable temperature. In it are vast areas of hemlocks. In May, June, July, August, and September it is a fine climate ; from November to April it is solid, old-time winter weather. The country generally is broad, high table-land. Pleurisy and pneumonia are uncommon. The mountain-tops are above fog and moisture. In McKane County in 1880 there were 1330 living to each death from phthisis.

Moderate elevation, stimulating climate, and a dry soil, the region is noted for the absence of phthisis. He thinks that all cases in the first and second stage should go there early in the year ; then they form the attachments to persons and things that enable them to stay on. The winter there is well adapted for the open-air treatment. All the results claimed for the Adirondacks may be had in the section named by him. The tiers of counties in the two States were pointed out in the maps.

A discussion followed. Dr. Otis, of Boston, was heartily in favor of open air and exercise. There are many climate resorts before the public. The region described by Dr. Hinsdale was sparsely settled, and the natives were an out-of-door people.

Dr. Daly, of Pittsburgh, Pa., knew McKane County, and spoke very favorably of it.

Dr. J. B. Walker, of Philadelphia, likewise confirmed Dr. Hinsdale's views. Desirable near-by localities are necessary. Eight years ago Dr. William Pepper read a paper before this Association on " Northern Pennsylvania and Southern New York." Dr. Loomis's visit to the Adirondacks had made them famous. The population of the Adirondacks was made up largely of those in search of health. The Cottage Sanitarium treatment offered many advantages. He deemed Dr. Hinsdale's paper a valuable one.

Dr. Roland G. Curtin, of Philadelphia, had been summering for ten years past in the locality described by Dr. Hinsdale. He deems it excellent—a desirable near-by locality.

Dr. Hinsdale closed the discussion. As Dr. Otis had said, they were country districts sparsely settled ; he had attempted to indicate a near-by desirable locality.

Dr. Samuel A. Fisk, of Denver, Col., read a paper on the "Meteorological Data of Colorado." Tables of temperature were distributed. In them were comparisons of the temperatures of Colorado contrasted with those of other well-known localities, all the way from Augusta, Ga., to Fort Grant, in Arizona. They were compiled for Dr. Fisk by an officer in the Government Weather Bureau.

He dwelt on the known advantage of Denver—its high elevation, one mile above sea-level, dryness of air, etc. ; he classed Denver among the cool climates. The winds were from the south and dry. It is not the windy locality that many fancy. He made a report based on ten years' observation of its climate. As a whole the climate was mild, with less wind than Philadelphia or New York City. He thinks the elevation a constant protector. In a cool climate like that of Colorado they can live out-of-doors. Regarding coolness : In Colorado in summer one instinctively seeks the shady side of the street and the sunny side in winter. Shade and sunshine there make an appreciable difference ; in winter patients can sit in the open air ; the dryness is due to solar radiation. Colorado is peculiarly suited for life out-of-doors—an abundance of pure air and sunshine.

Drs. Landon Carter Gray and A. L. Loomis visited the section.

A discussion followed. It developed the question of dust storms in Colorado. Dr. Griffiths, of Colorado Springs, was cited. The dust storms did no harm to patients. Breezes at sea-level are supposed to be composed of pure air and dust free. The discussion covered a large field. It was closed by Dr. Fisk, who said that, despite the dust that was found in all localities, the health of patients steadily improved, a fact too well-known to admit of any argument. He believes the damp air of the East more harmful than the dust of the West.

The Hon. Mark W. Harrington, of Washington, Chief of

the Weather Bureau, spoke *apropos* of sunshine, etc. Wind is a variable quantity. Take a lofty building, the velocity of the wind increases as we ascend. It is one thing at street-level, another half-way up, and still another when the top is reached, as proven by the anemometers.

Dr. Robert H. Babcock, of Chicago, asked Mr. Harrington if the high buildings in Chicago had an influence on the winds in the streets. Mr. Harrington replied that they might have, but that the whole question of the wind was a very complicated one.

Dr. Fisk closed the discussion. The soil of Colorado was dry and porous, hence dust. Solar radiation made the atmosphere very dry. In sending patients to Colorado, they should be sent to physicians knowing the State; they would advise as to the proper locality.

The next paper was by the Hon. Mark W. Harrington, Chief of the Weather Bureau, Washington. Its title was "Sensible Temperatures." By way of introduction he said that temperatures were subjects of much interest to physicians and patients. The term "sensible temperatures" was one of his own coining; it was the temperature felt by the skin. By sensible temperature, that which is felt at the surface of the skin—say, on the back of the hand.

On a sensible temperature depends our sense of comfort in hot weather. High shade temperature does not necessarily mean discomfort if the dew-point is low. It may be 127° in the shade, but the temperature felt by the skin may be 45° below that, owing to the dew-point. He produced a chart showing shade temperatures and dew-points in parallel columns; where they intersected on the chart, that indicated the sensible temperature or that actually felt by the individual.

By way of contrast, he made a comparison between 110° and 115° on the plains, where there is humidity, and where it may be less trying than 80° or 90° at the seaboard. The temperature of El Paso, Tex., is similar to that of Erie, Pa.

The paper was full of new and timely thoughts, as between the apparent and real in temperature as applied to the human body. There are places in the United States in summer where the thermometer may run up to 120° to 140° in the sun. The direct sun's rays seem to exert a special stimulus

on organic structures. The color of clothing is of less consequence than its looseness.

A discussion followed. Dr. Roland G. Curtin remarked that the paper opened a new field. He felt that the Association was greatly indebted to Mr. Harrington for his paper; he dwelt on its value.

Dr. Judson Deland, of Philadelphia, said that medical men wanted to know the temperatures experienced by their patients.

Dr. Guy Hinsdale, of Philadelphia, remarked that the paper unfolded a new way of looking at the weather maps. In future, in looking at the weather maps, we should make a correction, noting the difference between shade temperature and dew-point, to obtain the sensible temperature. All are familiar with barometric corrections; the same will be necessary in making thermometric calculations.

Dr. Robert H. Babcock, of Chicago, referred to the paper's practical bearing on the clothing of our patients—facts in reference to sensible temperatures. Patients should wear wool through the summer, that they may not be exposed to too sudden changes, particularly patients suffering from pulmonary disease.

Dr. Daly, of Pittsburgh, Pa., spoke of Mr. Harrington's contribution as throwing new and valuable light on an important theme. It interests the well as well as the sick citizen.

Dr. J. B. Walker, of Philadelphia, said that it gave a definite scientific value to data with which we have long been familiar. It seems a new field, that of knowing the difference between the apparent and real, and constitutes a vast step in advancing our scientific work.

In closing the discussion, Mr. Harrington said that his subject was new. He expressed the hope that physicians would perfect it. He asked the question, What is the temperature of the vapor of perspiration? He answered the query by stating that in a freely perspiring surface the temperature must be greater than that for the evaporation of pure water, as the perspiration is not a pure fluid.

Next in order was a paper by Dr. Judson Deland, of Philadelphia, entitled "Beri Beri."

He described with great minuteness of detail several cases

of beri-beri, studied by him at the Quarantine Station, Philadelphia—cases in a mixed crew on a vessel from the East Indies. Temperature normal; heart murmur; emaciation; epigastric tenderness; finger-tips anæsthetic, again hyperæsthetic. Examined blood, it was normal. In the second case patient was weak; œdema of body; much dyspnœa on exertion; pulsating jugular; extensive nervous disturbance; anasarca; tricuspid murmur. Examined the blood, it was normal. Searched for parasites in the blood, none were found. Anæsthesia of buccal and nasal mucous membrane; no knee jerks; lungs normal; dilatation of right and left ventricles. In short, a case of interstitial neuritis, with changes in cutaneous sensibility. The third case had features common to cases one and two.

He deemed the cases interesting, as beri-beri is rarely recognized in this country. It is a disease of the South. All the cases were sailors fed on salt fish and poor rice. Perspiration had a disagreeable odor, like that of negroes.

Regarding the etiology of the disease, it was a disease of the East and West Indies. It seems to be a peripheral neuritis. Men had no symptoms of scurvy. First the Egyptians in the crew were affected, next the East Indians—all men with dark skins. Dr. Ashmead deems the fermentation of sugar a cause, developing carbonic acid.

Medical Director Albert L. Gihon, U. S. Navy, remarked that he had seen many cases of beri-beri during his sea duty. He saw eight or ten cases when the Brazilian men-of-war were in New York Harbor for the late Columbian naval parade. The cases described by Dr. Deland were admirable word pictures of such cases—anasarca, debility, anæsthesia. They get well under proper dieting. He deemed beri-beri a disease of malnutrition. He did not believe that it was due to fermentation in cargoes of sugar. Certainly the Brazilian men-of-war supplying the cases had no cargoes of sugar. To repeat, he believed it to be a simple disease of malnutrition.

Dr. Daly, of Pittsburgh, Pa., thought that it might be due to ptomaine intoxication. There was no degeneration or disease properly so called. Thought that there might be a digestive fermentation and intoxication.

Dr. Wolfred Nelson, F.R.G.S., of New York, for many

years a practitioner and traveller in Spanish America, asked Dr. Deland if any chemical or microscopical examination of the urine had been made.

Dr. Guy Hinsdale, of Philadelphia, deemed it a neuritis. Dr. Ashmead, of New York, thinks it due to carbonic acid poisoning—due to fermentation in cargoes of sugar.

Dr. Robert H. Babcock, of Chicago, asked if all recovered. He wanted to know if they were cases of acute cardiac asthenia, such as we meet in typhoid-fever, etc.

Dr. Deland in reply said that the cardiac condition was very interesting. He deemed it a neuritis, and not a degeneration ; all recovered. As to Dr. Hinsdale's question as to carbonic-acid poisoning, he thought it a specific infectious disease associated with neuritis. He thought that the crew had been unruly after leaving the East Indies, and had been punished by way of the stomach—bad food, bad fish, bad rice.

Hearts returned to their normal condition. It was, as Dr. Babcock had supposed, a simple cardiac asthenia, due to want of tonicity of the cardiac muscle, where dilatation was a consequence of weakness. Replying to Dr. Wolfred Nelson, he said that but one test had been made of urine ; he failed to remember that it presented anything abnormal.

Dr. Nelson said such cases were seen in South America, where he had lived and practised. They died, as a rule, of general anasarca. Dr. Landon Carter Gray, of New York, in his book on " Nervous Diseases," referred to it as a neuritis, and such it seemed to be. Neglect and poor diet were the predisposing causes. It was quite common in the Brazils.

Dr. William H. Daly, of Pittsburgh, Pa., read the next paper, on " Some Practical Observations on So-called Malaria." Dr. Daly deems the malarial germ one of the infusoria got in impure water in lowlands and swamps. Cited cases in his practice where the malaria was due to drinking well-water in the lowlands. Some believe that malaria is most dangerous at night ; that the poison is breathed into the system. He believes the disease originates only in impure water. Thinks that the habitat of the germ is in the soil. Water in malarial districts always contained the germ. He referred to Lavaran's book. So-called malaria is a water-borne disease. Malarial-fever in the United States is clearly a preventable disease.

He said that in malarial districts all escaped who drank pure cistern water; they were healthy and ruddy. Malaria gets into the body through the food channels.

Medical Director Gihon, of Washington, while accepting part of Dr. Daly's statements, did not agree with him in thinking that aqueous vapor in such localities was harmless.

Dr. Wolfred Nelson spoke of malaria in the island of Cuba, where he had spent nearly six months. The Juraguay mines are near Santiago de Cuba. His friend, the late Dr. John Hartmann, a graduate of Philadelphia, was surgeon to the Juraguay Mining Company. Hundreds of Spaniards were employed. They work in gangs by day and by night as well. The night gang, who slept by day and went to work on a full stomach, never developed a single case of malaria in any form, while the day gang, who slept by night, while fog and vapors were rife, had malarial-fever, bilious remittants, and the multiple malarial manifestations so familiar to all practitioners in the tropics.

Dr. Daly closed the discussion. He said that he believed that in the next five years his views would be accepted by the profession.

Dr. John H. Musser's paper, entitled "Shock in Acute Disease," was read by title, owing to the absence of the author.

The final paper of the session, or 21 on the official programme, was by Dr. W. C. Glasgow, of St. Louis, Mo. Its title was "The Physical Signs of Cellular Œdema of the Lungs considered in their Relation to the Pathological Changes."

Dr. Glasgow's paper dealt with cases in his hospital practice in St. Louis. Thinks the disease is due to sepsis. He detailed the symptoms as observed by him and the changes *post-mortem*. The signs at times in these cases were very perplexing and contradictory. Infiltration was sudden, and resolution may be as sudden.

A discussion followed. Dr. Roland G. Curtin deemed the paper valuable in accounting for many puzzling signs.

Dr. Robert H. Babcock, of Chicago, said Dr. Glasgow's cases compare with a form of broncho-pneumonia described by Dr. Delafield. The disease was in the walls rather than in the bronchioles.

This closed the session, and the Association adjourned to meet next year in Virginia. It was a largely attended and successful meeting.

During the last day Dr. Wolfred Nelson, of New York, informally brought before some of the members a series of photographs made by him last fall of the Grosse Isle Quarantine Station, in the lower St. Lawrence, below Quebec. He had visited the station following the meeting of the American Public Health Association in Chicago. He said that the situation was an ideal one—an island in the lower St. Lawrence, 24 miles below Quebec and 4 miles from one and 6 miles from the other shore. It is a Canadian Government station. Forty buildings are ready for the reception of patients of all classes, from saloon to steerage. In a crisis 3000 can be cared for. It is the most extensive and modern quarantine plant on this Continent. In twenty-four hours the effects of 1000 immigrants can be rendered absolutely sterile or safe. Dr. F. Montizambert, the Superintendent of Canadian Quarantines, is in charge. He has devoted his life to the work, having studied the American and continental stations. He has a large staff—all trained men.

Dr. Nelson, in closing, referred to Dr. A. N. Bell, of Brooklyn, as the pioneer of practical sanitation in America, referring especially to Dr. Bell's original discovery and use of live steam as a disinfectant of yellow-fever while he was an assistant surgeon, U. S. Navy, more than forty years ago, and to his continuous advocacy of steam disinfection, particularly of infected vessels, merchandise, and baggage at ports of entry, until it is now universally recognized as the most efficient of all means of disinfection. He also referred to the excellent work done at New Orleans by Dr. Joseph Holt, who there created a modern quarantine station on strictly scientific principles.

To-day our neighbor, Canada, can cope successfully and scientifically with any infectious or contagious disease arriving in the St. Lawrence.

SANITARY TOPOGRAPHY, CLIMATE, AND MINERAL SPRINGS OF NEW YORK.*

By A. N. Bell, A.M., M.D.

The North Section of the State—north of the Mohawk River from its junction with the Hudson just above Troy, and of the Erie Canal, which follows its course and beyond to Lake Erie at Buffalo—comprises mountains, forests, and certain regions and localities remarkable for the grandeur and beauty of the scenery, general healthfulness, and the great number of mineral springs of almost every variety, with improvements round about to the highest degree of excellence.

Of the *mountains* there are six distinct and nearly parallel ranges, besides two ridges of plateaus of less altitude. These ranges all trend from northeast to southwest, and at their eastern terminal abut on either Lake Champlain or Lake George, or on the St. Lawrence River or its tributaries. Beginning at the southeast, they are: 1. The Palmertown range, from the vicinity of Whitehall southwest to the lower part of Saratoga County. 2. The Kayaderosseras, or Lucerne Mountains, beginning at Ticonderoga, extending along the west side of Lake George, through Warren and Saratoga counties to Montgomery County. 3. The Clinton or Adirondack range, beginning at Point Trembleau, on Lake Champlain, passing through Essex, Warren, Saratoga, Hamilton, and Fulton counties to the Mohawk River. This range contains the highest summits in the State—Mount Marcy, or Tahawas, whose altitude is variously stated at from 5379 to 5467 feet; Dix Peak, 5200 feet; Mount McIntyre, 5133 feet; Sandanoni, and Mount McMartin, each about 5000 feet, and Dial Mountain, about 4900 feet above sea level. It also forms the water-shed between the tributaries of the St. Lawrence and those of the Hudson and Mohawk. 4. The Au Sable or Peru range, beginning still higher on Lake Champlain, near the mouth of the Au Sable River, and trending southwest through Essex, Hamilton, and Fulton counties into Montgomery

* Continued from page 215.

County. The highest mountain of this range is White Face, its altitude being 4855 feet, and Mounts Pharaoh and Taylor are each about 4500 feet. 5. The Chateaugay range, which commences near the northern extremity of Lake Champlain, in Canada, passes through Clinton, Franklin, and Hamilton counties to Herkimer County and to the Mohawk River at its foot. It maintains an average altitude of nearly 2000 feet through its whole course, while Mount Seward is 5100 feet, and several of its summits approach 4000 feet in height. 6. The St. Lawrence range, parallel with the last, and 10 to 12 miles north of it, follows the course of the southern shore of the St. Lawrence. The broad plateau known as the Highlands of Black River is about 60 miles in length and from 1200 to 1600 feet altitude. Between these Highlands and the Mohawk is a ridge about 20 miles long, nearly 9 miles broad at its base, and having a general elevation of 800 to 900 feet, known as Hassencleaver Ridge.

Of the *rivers*, the Hudson is chief. It is navigable to Troy, nearly 160 miles from its mouth. It has many tributaries, of which the most important is the Mohawk. The others worthy of mention are Schroon, Hoosic, Rattenkill, Kinderhook, and Croton on the east; and Wallkill, Rondout, Esopus, Kaaterskill, and Sacondaga on the west. Several streams flow into Lake Champlain, of which the Chazy and Saranac are the largest. The St. Lawrence washes the northern boundary for nearly 100 miles, and has several important affluents from the State; among which may be named the Oswegatchie, Indian, Grasse, Racket, St. Regis, and Salmon. Oswego River (which was the original outlet of the lakes in Central New York, and, in connection with the Oswego Canal and River Improvement, is navigable for canal boats and steamboats for 120 miles), Black River, and the Genesee all flow into Lake Ontario, the last being the outlet of four or five small lakes.

The Alleghany, one of the constituents of the Ohio River, has a course of 50 miles in the State; the Susquehanna, with its tributaries, the Tioga and Chenango; and the Delaware, with its eastern and western branches, and its affluents, the Little Delaware, Mongaup, and Neversink, are the most important of the other rivers which drain the State.

The Niagara River extends from Lake Erie to Lake On-

tario, a distance of 30 miles. It receives the waters of all the upper lakes—Erie, St. Clair, Huron, Michigan, Superior, and a number of smaller ones. From source to outfall it has a total descent of 334 feet, but the greater part of the fall occurs within a distance of 7 or 8 miles, beginning with the rapids, 2 miles above the great Falls, which received their name—*Niagara*, meaning the "thunder of waters"—from the aborigines. Their roar, under favorable circumstances, may be heard at a distance of 15 miles.

There are three distinct falls: the Horsehoe Fall—so called from its crescent shape—is by far the largest, and is in the direct course of the river. It is 2000 feet wide and 154 feet high. The American Fall is 660 feet wide, and the Central Fall 243 feet, each having a fall of 163 feet.

The water flows on perpetually the same, full and clear; neither the snows of winter nor the evaporation of summer, neither rains nor drought materially affect it—excepting that about once in every seven years there is a gradual rise and fall, which is attributed to some undiscovered disturbance that affects Lake Erie.

"Of all the sights on this earth of ours which tourists travel to see," wrote Anthony Trollope, "I am inclined to give the palm to Niagara. In the catalogue of such sights I intend to include all buildings, pictures, statues, and wonders of art made by men's hands, and also all beauties of nature prepared by the Creator for the delight of His creatures. This is a long word; but, as far as my taste and judgment go, it is justified. I know of no other one thing so beautiful, so glorious, and so powerful."

This wonderful cataract is 447 miles from New York, within a single day's journey, and is reached most directly by the New York Central and Hudson River Railway, of which it forms the western terminus.

Of the *lakes*, the great ones are so universally known and the smaller ones so numerous—that the bare enumeration of them would fill a page—that it is not deemed necessary to attempt a description of them other than their situation as comprehended in the context.

The *forests*, unfortunately—except in the Adirondacks, and even there to far too great an extent—have been well nigh

sacrificed to trade in lumber. The Adirondacks comprise the mountainous region from the northern and northwestern boundary of the State by Canada and the St. Lawrence, having Lakes George and Champlain on the east, and extending nearly to the Mohawk on the south. In the midst is an elevated plateau extending over an area of about 150 by 100 miles, with an elevation of 2000 feet above the sea, traversed by five of the six ranges of mountains already referred to, running nearly parallel with each other from southwest to northeast, terminating at Lake Champlain. But there are in all not less than 500 separate mountains in the Adirondacks, very few of which have distinctive names; all of which are more or less wooded except the summits of the loftiest, which are rocky and only partially covered with moss and shrub pines. The valleys of the region are dotted with lakes, big and little, to the number of about 1000, one of which—Lake Perkins—is situated nearly 4500 feet above sea level. Some of these lakes are 20 miles or more in length and half as wide as they are long, while hundreds of others cover only a few acres each. The largest are Long Lake, the Upper and Lower Saranac, Tupper, the Fulton lakes, Pleasant, Raquette, Forked, Newcomb, Colden, Blue Mountain, Eckford, Sandford, and Henderson. This series of lakes is connected by a system of rivers and small streams, of which the Saranac and Au Sable are among the most important, running a northeast course, and emptying into Lake Champlain. The largest river of the region is Raquette, which is 12 miles long. It rises in Raquette Lake, in the western part of Hamilton County, and discharges its waters into the St. Lawrence. The forest, which, as before remarked, is the only one of magnitude in the State, includes the evergreens, pine and spruce; and birch, poplar, maple, and ash; while the vast swamps are almost impenetrable on account of the thick growth of cedar, tamarack, and hemlock. As a whole, the Adirondacks is a region of mountains and lakes, and much of it still wooded with pine and spruce; and this portion particularly is that which has given it its reputation as a sanitary resort.

With reference to the salutary effect of pine forests in general, the reader should refer to an earlier paper of this series—the forest of South Carolina (Vol. XXX., p. 417).

Of the Adirondack wilderness in particular, or at least a certain portion of it, as a sanitary resort for consumptives, its use as such by several of the most distinguished physicians of New York furnishes indubitable evidence. Amid the pine and spruce growth 2000 feet above sea level there are many delightfully sunny areas and slopes with sandy soil, thoroughly drained, and completely protected from the northern and northwestern winds, and with a temperature of remarkable equableness. Saratoga County is the southeast corner of the Adirondack region, and the village of Saratoga Springs is situated upon what may be considered the terminal spur eastward of the Adirondack Mountains, at an elevation of 400 feet above sea level; and hereabout is a group of mineral springs which, together with the beauty of the scenery, the magnificence of the local improvements, and the healthfulness of the climate, render it the most famous and, perhaps, all things considered, the most justly celebrated sanitary resort in America.

THE SARATOGA SPRINGS and the properties of the waters are as follows:

Columbian Spring. John H. Steele, analyst.

Saline, Chalybeate, Carbonated.

Sodium bicarbonate,	grains per gallon	.....	15.40
Calcium carbonate,	"	"	68.00
Magnesium bicarbonate,	"	"	46.41
Iron carbonate,	"	"	5.58
Sodium chloride,	"	"	4.67
Sodium iodide,	"	"	2.56
Silica,	"	"	2.05
Total	"	"	407.30

Gases.

Atmospheric air,	cubic inches	.....	4.50
Carbonic acid,	"	"	272.06

Champion Spouting Spring. C. F. Chandler, analyst.

Saline, Carbonated.

Sodium bicarbonate,	grains per gallon	17.62
Calcium bicarbonate,	" "	227.07
Magnesium bicarbonate,	" "	193.91
Strontium bicarbonate,	" "	0.08
Lithium bicarbonate,	" "	6.25
Iron bicarbonate,	" "	0.65
Barium bicarbonate,	" "	2.08
Potassium sulphate,	" "	0.25
Sodium phosphate,	" "	0.01
Sodium chloride,	" "	702.24
Potassium chloride,	" "	40.45
Sodium bromide,	" "	3.58
Sodium iodide,	" "	0.23
Alumina,	" "	0.46
Silica,	" "	0.70
Sodium biborate, calcium fluoride, organic matter		traces.
Total		1,195.58

Gases.

Carbonic acid, cubic inches	465.46

Adirondack Mineral Spring, Whitehall, Washington County. C. Collier, analyst.

Calcareous, Saline.

Sodium carbonate,	grains per gallon	5.14
Potassium carbonate,	" "	5.32
Calcium carbonate,	" "	18.54
Magnesium carbonate,	" "	16.62
Lithium carbonate,	" "	0.02
Iron carbonate,	" "	5.04
Calcium sulphate,	" "	11.13
Sodium chloride,	" "	14.34
Silica,	" "	0.74
Manganese carbonate, alumina		traces.
Total		76.89

Gases.

Carbonic acid, cubic inches	67.27

Crystal Spring, C. F. Chandler, analyst.

Saline, Carbonated.

Sodium bicarbonate,	grains per gallon	.....	10.06
Calcium bicarbonate,	"	"	101.88
Magnesium bicarbonate,	"	"	75.16
Lithium bicarbonate,	"	"	4.33
Iron bicarbonate,	"	"	2.04
Barium bicarbonate,	"	"	0.73
Potassium sulphate,	"	"	2.16
Sodium chloride,	"	"	328.47
Potassium chloride,	"	"	8.33
Sodium bromide,	"	"	0.41
Sodium iodide,	"	"	0.06
Alumina,	"	"	0.31
Silica,	"	"	3.21
Strontium, bicarbonate, sodium phosphate, sodium biborate, calcium fluoride, organic matter			traces.
Total			537.15

Gases.

Carbonic acid, cubic inches			317.45

Congress Springs.

No. 1. John H. Steele, analyst.

Saline, Chalybeate, Carbonated.

Sodium bicarbonate,	grains per gallon	.....	8.98
Calcium carbonate,	"	"	98.10
Magnesium bicarbonate,	"	"	95.79
Iron carbonate,	"	"	5.07
Sodium chloride,	"	"	385.00
Sodium iodide,	"	"	3.50
Silica,	"	"	1.50
Potassium bromide			trace.
Total			597.94

Gases.

Atmospheric air, cubic inches			7.00
Carbonic acid,	"	"	311.00

No. 2. J. D. Dane, analyst.

Saline, Carbonated.

Sodium carbonate,	grains per gallon	16.00
Calcium carbonate,	" "	144.00
Magnesium bicarbonate,	" "	32.00
Sodium chloride,	" "	434.40
Silica		trace.
Total		626.40

Gases.

Nitrogen,	cubic inches	7.20
Carbonic acid,	" "	312.80

No. 3. C. F. Chandler, analyst.

Saline, Carbonated.

Sodium bicarbonate,	grains per gallon	10.77
Calcium bicarbonate,	" "	143.40
Magnesium bicarbonate,	" "	121.76
Lithium bicarbonate,	" "	4.76
Iron bicarbonate,	" "	0.34
Barium bicarbonate,	" "	0.93
Potassium sulphate,	" "	0.89
Sodium phosphate,	" "	0.02
Sodium chloride,	" "	400.44
Potassium chloride,	" "	8.05
Sodium bromide,	" "	8.56
Sodium iodide,	" "	0.14
Silica,	" "	0.84
Strontium bicarbonate, sodium biborate, calcium fluoride, alumina		traces.
Total		700.90

Gases.

Carbonic acid,	cubic inches	302.30

No. 4. Davy and Farady (London), analysts.

Saline.

Sodium carbonate,	grains per gallon	0.56
Calcium carbonate,	" "	116.00

Magnesium carbonate,	grains	per gallon	56.80
Sodium chloride,	"	"	385.44
Sodium iodide,	"	"	4.02
Iron oxide,	"	"	0.64
Potassium bromide			trace.
Total			563.46

No. 5. J. R. Chilton, analyst.

Saline, Carbonated.

Sodium carbonate,	grains	per gallon	7.20
Calcium carbonate,	"	"	86.14
Magnesium carbonate,	"	"	78.62
Iron carbonate,	"	"	0.84
Sodium sulphate,	"	"	0.65
Sodium chloride,	"	"	363.83
Potassium bromide with sodium iodide,	"	"	5.92
Alumina,	"	"	0.32
Silica,	"	"	0.47
Total	"	"	543.99

Gases.

Atmospheric air,	cubic inches		5.41
Carbonic acid,	"	"	284,65

Empire Springs.

No. 1. C. F. Chandler, analyst.

Saline, Carbonated.

Sodium bicarbonate,	grains	per gallon	9.02
Calcium bicarbonate,	"	"	109.66
Magnesium carbonate,	"	"	42.96
Lithium bicarbonate,	"	"	2.08
Iron bicarbonate,	"	"	0.79
Barium bicarbonate,	"	"	0.07
Potassium sulphate,	"	"	2.77
Sodium phosphate,	"	"	0.02
Sodium chloride,	"	"	506.63

Potassium chloride,	grains	per gallon	4.29
Sodium bromide,	"	"	0.27
Alumina,	"	"	0.42
Silica,	"	"	1.46
Strontium bicarbonate, sodium biborate, calcium fluoride, sodium iodide, organic matter			traces.
Total			680.44
Gases.			
Carbonic acid, cubic inches			344.67

No. 2. E. Emmons, analyst.

Saline, Iodide.

Sodium bicarbonate,	grains	per gallon	30.85
Calcium bicarbonate,	"	"	141.82
Magnesium bicarbonate,	"	"	41.98
Sodium chloride,	"	"	269.70
Sodium iodide, or iodine,	"	"	12.00
Iron bicarbonate,			trace.
Total			496.00

Eureka Spring. — Allen, analyst.

Saline, Iodide, Carbonated.

Sodium bicarbonate,	grains	per gallon	8.75
Calcium bicarbonate,	"	"	41.32
Magnesium bicarbonate,	"	"	29.34
Iron bicarbonate,	"	"	3.00
Magnesium sulphate,	"	"	2.15
Sodium chloride,	"	"	166.81
Potassium bromide,	"	"	1.57
Sodium iodide,	"	"	4.67
Alumina,	"	"	0.23
Silica,	"	"	0.53
Total	"	"	258.37
Gases.			
Carbonic acid, cubic inches			239.00

Excelsior Spring. — Allen, analyst.

Saline, Iodide, Chalybeate, Carbonated.

Sodium bicarbonate,	grains per gallon	.....	15.00
Calcium bicarbonate,	" "	.....	77.00
Magnesium bicarbonate,	" "	.....	32.23
Iron bicarbonate,	" "	.....	3.22
Sodium sulphate,	" "	.....	1.32
Sodium chloride,	" "	.....	370.64
Sodium iodide,	" "	.....	4.24
Sodium silicate,	" "	.....	4.00
Potassium silicate,	" "	.....	7.00
Strontium sulphate		.....	trace.
Total		.....	514.75

Gases.

Carbonic acid, cubic inches	.....	250.00

Flat Rock Springs—2.

No. 1. John H. Steele, analyst.

Saline, Chalybeate, Carbonated.

Sodium bicarbonate,	grains per gallon	.....	20.79
Calcium carbonate,	" "	.....	60.57
Magnesium bicarbonate,	" "	.....	42.70
Iron carbonate,	" "	.....	5.39
Sodium chloride,	" "	.....	148.87
Sodium iodide,	" "	.....	1.33
Potassium bromide, alumina, silica		.....	traces.
Total		.....	279.65

Gases.

Atmospheric air, cubic inches	.....	6.50
Carbonic acid, " "	.....	287.50

No. 2. C. F. Chandler, analyst.

Saline.

Sodium bicarbonate,	grains per gallon	.....	9.10
Calcium bicarbonate,	" "	.....	98.63

Magnesium bicarbonate,	grains	per gallon	29.47
Strontium bicarbonate,	"	"	0.01
Lithium bicarbonate,	"	"	3.23
Iron bicarbonate,	"	"	0.09
Barium bicarbonate,	"	"	0.10
Potassium sulphate,	"	"	0.48
Sodium phosphate,	"	"	0.04
Sodium chloride,	"	"	108.85
Potassium chloride,	"	"	7.99
Magnesium chloride,	"	"	10.83
Sodium bromide,	"	"	0.32
Sodium iodide,	"	"	0.01
Alumina,	"	"	1.34
Sodium biborate, organic matter			traces.
Total			270.00

Geyser Spouting Spring. C. F. Chandler, analyst.

Saline, Lithium, Carbonated.

Sodium bicarbonate,	grains	per gallon	71.23
Calcium bicarbonate,	"	"	168.39
Magnesium bicarbonate,	"	"	149.34
Strontium bicarbonate,	"	"	0.43
Lithium bicarbonate,	"	"	9.00
Iron bicarbonate,	"	"	0.98
Barium bicarbonate,	"	"	2.01
Potassium sulphate,	"	"	0.32
Sodium chloride,	"	"	562.08
Potassium chloride	"	"	24.64
Sodium bromide,	"	"	2.21
Sodium iodide,	"	"	0.25
Silica,	"	"	0.66
Sodium phosphate, sodium biborate, calcium fluoride, alumina, organic matter			traces.
Total			991.54

Gases.

Carbonic acid, cubic inches			454.08

Hathorn Spring. C. F. Chandler, analyst.

Saline, Lithium, Carbonated.

Sodium bicarbonate,	grains	per gallon	4.29
Calcium bicarbonate,	"	"	170.65
Magnesium bicarbonate,	"	"	176.46
Lithium bicarbonate,	"	"	11.45
Iron bicarbonate,	"	"	1.13
Barium bicarbonate,	"	"	1.74
Sodium chloride,	"	"	509.97
Potassium chloride,	"	"	9.60
Sodium bromide,	"	"	1.53
Sodium iodide,	"	"	0.19
Alumina,	"	"	0.13
Silica,	"	"	1.26
Strontium bicarbonate, sodium phosphate, sodium bicarbonate, calcium fluoride			traces.
Total			888.40

Gases.

Carbonic acid, cubic inches	375.75

Hamilton Springs—2.

No. 1. John H. Steele, analyst.

Saline, Chalybeate, Iodide.

Sodium bicarbonate,	grains	per gallon	27.04
Calcium carbonate,	"	"	92.40
Magnesium bicarbonate,	"	"	35.20
Iron bicarbonate,	"	"	5.39
Sodium chloride,	"	"	297.30
Sodium iodide,	"	"	3.00
Potassium bromide			trace.
Total			460.33

Gases.

Atmospheric air, cubic inches	4.00
Carbonic acid	316.00

No. 2. — Allen, analyst.

Saline, Chalybeate, Iodide.

Sodium carbonate,	grains	per gallon	34.25
Calcium carbonate,	"	"	97.99
Magnesium carbonate,	"	"	39.06
Iron carbonate,	"	"	4.62
Sodium chloride,	"	"	298.66
Sodium iodide,	"	"	3.59
Silica,	"	"	1.00
Total,	"	"	479.17

Gases.

Carbonic acid, cubic inches	320.00

High Rock Springs—2.

No. 1. C. F. Chandler, analyst.

Saline, Chalybeate, Carbonated.

Sodium bicarbonate,	grains	per gallon	34.89
Calcium bicarbonate,	"	"	131.74
Magnesium bicarbonate,	"	"	54.92
Iron carbonate,	"	"	1.48
Barium bicarbonate,	"	"	1.61
Sodium chloride,	"	"	390.13
Potassium chloride,	"	"	8.50
Sodium bromide,	"	"	0.73
Sodium iodide,	"	"	0.08
Alumina,	"	"	1.22
Silica,	"	"	2.26
Strontium bicarbonate, barium bicarbonate, calcium phosphate, calcium fluoride, organic matter			traces.
Total			627.56

Gases.

Carbonic acid, cubic inches	409.46

No. 2. John H. Steele, analyst.

Saline, Chalybeate, Carbonated.

Sodium bicarbonate,	grains	per gallon	17.54
Calcium carbonate,	"	"	69.29

Magnesium bicarbonate, grains per gallon	61.59
Iron carbonate, " "	5.58
Sodium chloride, " "	189.10
Sodium iodide, " "	2.50
Potassium bromide, alumina, silica	traces.
Total	345.60

Gases.

Atmospheric air, cubic inches	5.00
Carbonic acid, " "	304.00

Kissingen Spring. — Sharples, analyst.

Saline, Lithium, Carbonated.

Sodium bicarbonate, grains per gallon	67.62
Calcium bicarbonate, " "	140.26
Magnesium bicarbonate, " "	70.47
Lithium bicarbonate, " "	5.13
Iron bicarbonate " "	1.56
Barium bicarbonate, " "	0.99
Sodium chloride, " "	338.50
Potassium chloride, " "	16.98
Sodium bromide, " "	1.80
Sodium iodide, " "	0.04
Silica, " "	1.28
Strontium bicarbonate, potassium sulphate, calcium fluoride, alumina	traces.
Total	644.63

Gases.

Carbonic acid, cubic inches	361.50

Putnam Spring. J. R. Chilton, analyst.

Saline, Chalybeate, Carbonated.

Sodium bicarbonate, grains per gallon	14.32
Calcium bicarbonate, " "	68.80
Magnesium bicarbonate, " "	51.60

Iron bicarbonate,	grains	per gallon	7.00
Sodium sulphate,	"	"	1.68
Sodium phosphate,	"	"	0.21
Sodium chloride,	"	"	2.14
Sodium iodide,	"	"	2.00
Alumina,	"	"	0.56
Silica,	"	"	0.84
Potassium bromide			trace.
Total			361.01

Gases.

Atmospheric air, cubic inches	6.40
Carbonic acid, " "	326.40

Pavilion Springs—2.

No. 1. C. F. Chandler, analyst.

Saline, Lithium, Carbonated.

Sodium bicarbonate,	grains	per gallon	3.76
Calcium bicarbonate,	"	"	120.17
Magnesium bicarbonate,	"	"	76.27
Lithium bicarbonate,	"	"	9.49
Iron bicarbonate,	"	"	2.57
Barium bicarbonate,	"	"	0.88
Potassium sulphate,	"	"	2.03
Sodium chloride,	"	"	459.90
Potassium chloride,	"	"	7.66
Sodium bromide,	"	"	0.99
Sodium iodide,	"	"	0.07
Alumina,	"	"	0.33
Silica,	"	"	3.16
Strontium bicarbonate, sodium phosphate, sodium biborate, calcium fluoride, silica			traces.
Total			687.28

Gases.

Carbonic acid, cubic inches	332.46

No. 2. J. R. Chilton, analyst.

Saline, Carbonated.

Sodium carbonate,	grains	per gallon	4.92
Calcium carbonate,	"	"	52.84
Magnesium carbonate,	"	"	56.92
Iron carbonate,	"	"	3.51
Sodium sulphate,	"	"	1.48
Calcium phosphate,	"	"	0.19
Sodium chloride,	"	"	187.68
Potassium bromide (with sodium iodide)	"	"	2.59
Alumina,	"	"	0.42
Silica,	"	"	1.16
Total,	"	"	311.71

Gases.

Atmospheric air, cubic inches	5.30
Carbonic acid, " "	359.50

New Putnam Spring. C. F. Chandler, analyst.

Saline, Lithium.

Sodium bicarbonate,	grains	per gallon	8.08
Calcium bicarbonate,	"	"	157.56
Magnesium bicarbonate,	"	"	173.61
Strontium bicarbonate,	"	"	0.11
Lithium bicarbonate,	"	"	9.83
Iron bicarbonate,	"	"	0.45
Barium bicarbonate,	"	"	0.38
Potassium sulphate,	"	"	2.26
Sodium chloride,	"	"	268.04
Potassium chloride,	"	"	14.87
Sodium bromide,	"	"	1.62
Alumina,	"	"	0.22
Silica,	"	"	3.00
Sodium phosphate, sodium biborate, calcium fluoride, sodium iodide, organic matter			traces.
Total			640.03

Red Spring. — Appleton, analyst.

Saline.

Sodium bicarbonate,	grains per gallon	.....	15.33
Calcium bicarbonate,	" "	.....	101.26
Magnesium bicarbonate,	" "	.....	42.41
Lithium bicarbonate,	" "	.....	0.94
Sodium chloride,	" "	.....	83.53
Potassium chloride,	" "	.....	6.86
Iron oxide (with traces of phosphates),	" "	.....	2.10
Silica,	" "	.....	3.25
Strontium bicarbonate		.....	trace.
Total		.....	255.68

Saratoga A or "Alum" Spring. J. G. Pahle, analyst.

Saline, Carbonated.

Sodium bicarbonate,	grains per gallon	.....	6.75
Calcium bicarbonate,	" "	.....	56.85
Magnesium bicarbonate,	" "	.....	20.48
Lithium bicarbonate,	" "	.....	1.72
Iron bicarbonate,	" "	.....	1.72
Sodium sulphate,	" "	.....	2.50
Calcium sulphate,	" "	.....	0.45
Potassium sulphate,	" "	.....	0.37
Magnesium sulphate,	" "	.....	0.29
Sodium chloride,	" "	.....	565.30
Potassium chloride,	" "	.....	0.36
Alumina,	" "	.....	0.38
Silica,	" "	.....	1.46
Calcium chloride, magnesium chloride, organic matter.			traces.
Total		.....	658.83

Gases.

Carbonic acid, cubic inches		.....	212.00

Seltzer Spring. C. F. Chandler, analyst.

Saline, Carbonated.

Sodium bicarbonate,	grains per gallon	.....	29.43
Calcium bicarbonate,	" "	.....	89.87

Magnesium bicarbonate,	grains per	gallon	40.34
Lithium bicarbonate,	"	"	0.90
Iron bicarbonate,	"	"	0.70
Potassium sulphate,	"	"	0.56
Sodium chloride,	"	"	134.29
Potassium chloride,	"	"	1.34
Sodium bromide,	"	"	0.63
Sodium iodide,	"	"	0.03
Alumina,	"	"	0.37
Silica,	"	"	2.56
Strontium bicarbonate, barium bicarbonate, sodium phosphate, calcium phosphate, sodium biborate, calcium fluoride, boracic acid, organic matter			traces.
Total			302.02

Gases.

Carbonic acid, cubic inches	324.08

Star Spring. C. F. Chandler, analyst.

Saline, Carbonated.

Sodium bicarbonate,	grains per	gallon	12.66
Calcium bicarbonate,	"	"	124.46
Magnesium bicarbonate,	"	"	61.91
Lithium bicarbonate,	"	"	1.59
Iron bicarbonate,	"	"	1.21
Barium bicarbonate,	"	"	0.10
Potassium sulphate,	"	"	5.40
Sodium chloride,	"	"	398.36
Potassium chloride,	"	"	9.70
Sodium bromide,	"	"	0.57
Sodium iodide,	"	"	0.13
Silica,	"	"	1.28
Strontium bicarbonate, sodium phosphate, sodium biborate, calcium fluoride, alumina, organic matter			traces.
Total			617.37

Gases.

Carbonic acid, cubic inches	407.65

Union Springs—2.

No. 1. J. R. Chilton, analyst.

Saline, Chalybeate, Carbonated.

Sodium carbonate,	grains per gallon	.....	12.80
Calcium carbonate,	" "	.....	41.60
Magnesium carbonate,	" "	.....	84.27
Iron carbonate,	" "	.....	5.45
Sodium chloride,	" "	.....	243.62
Sodium iodide,	" "	.....	3.60
Silica,	" "	.....	1.57
Potassium bromide		.....	trace.
Total		.....	392.91

Gases.

Atmospheric air, cubic inches	.....	4.62
Carbonic acid, " "	.....	344.16

No. 2. C. F. Chandler, analyst.

Saline, Carbonated.

Sodium bicarbonate,	grains per gallon	.....	17.01
Calcium bicarbonate,	" "	.....	96.70
Magnesium bicarbonate,	" "	.....	109.69
Lithium bicarbonate,	" "	.....	2.61
Iron bicarbonate,	" "	.....	0.27
Barium bicarbonate,	" "	.....	1.70
Potassium sulphate,	" "	.....	1.82
Sodium phosphate,	" "	.....	0.03
Sodium chloride,	" "	.....	453.30
Potassium chloride,	" "	.....	1.30
Sodium iodide,	" "	.....	0.04
Alumina,	" "	.....	0.32
Silica,	" "	.....	2.65
Strontium bicarbonate, sodium biborate, calcium fluoride, organic matter		.....	traces.
Total		.....	696.17

Gases.

Carbonic acid, cubic inches	.....	384.97

United States Spring. C. F. Chandler, analyst.

Saline, Lithium.

Sodium bicarbonate,	grains	per gallon	4.67
Calcium bicarbonate,	"	"	93.12
Magnesium bicarbonate,	"	"	72.88
Strontium bicarbonate,	"	"	0.02
Lithium bicarbonate,	"	"	4.85
Iron bicarbonate,	"	"	0.71
Barium bicarbonate,	"	"	0.91
Sodium phosphate,	"	"	0.02
Sodium chloride,	"	"	141.87
Potassium chloride,	"	"	8.62
Sodium bromide,	"	"	0.84
Sodium iodide,	"	"	0.05
Alumina,	"	"	0.09
Silica,	"	"	3.19
Sodium biborate, sodium iodide, organic matter			traces.
Total			331.84
Gases: Carbonic acid, cubic inches			245.73

Vichy Spring. C. F. Chandler, analyst.

Saline, Carbonated.

Sodium bicarbonate,	grains	per gallon	82.87
Calcium bicarbonate,	"	"	95.52
Magnesium bicarbonate,	"	"	41.50
Lithium bicarbonate,	"	"	1.76
Iron bicarbonate,	"	"	0.05
Barium bicarbonate,	"	"	0.59
Sodium chloride,	"	"	128.69
Potassium chloride,	"	"	14.11
Sodium bromide,	"	"	0.99
Alumina,	"	"	0.48
Silica,	"	"	0.76
Strontium bicarbonate, potassium sulphate, sodium phosphate, sodium biborate, calcium fluoride, sodium iodide, organic matter			traces.
Total			367.32
Gases: Carbonic acid, cubic inches			383.07

Walton or Iodine Spring. E. Emmons, analyst.

Saline, Iodine, Carbonated.

Sodium carbonate,	grains per gallon	.....	2.00
Calcium carbonate,	" "	.....	26.00
Magnesium carbonate,	" "	.....	75.00
Iron carbonate,	" "	.....	1.00
Sodium chloride,	" "	.....	187.00
Sodium iodide,	" "	.....	3.50
Total	" "	.....	294.50

Gases.

Atmospheric air,	cubic inches	4.00
Carbonic acid,	" "	326.00

Washington Spring.

No. 1. J. R. Chilton, analyst.

Saline, Chalybeate, Carbonated.

Sodium bicarbonate,	grains per gallon	.....	8.48
Calcium bicarbonate,	" "	.....	84.10
Magnesium bicarbonate,	" "	.....	65.97
Iron bicarbonate,	" "	.....	3.80
Magnesium sulphate,	" "	.....	0.05
Sodium chloride,	" "	.....	182.73
Calcium chloride,	" "	.....	0.20
Magnesium chloride,	" "	.....	0.68
Potassium bromide,	" "	.....	0.47
Sodium iodide,	" "	.....	2.24
Silica,	" "	.....	1.50
Alumina		.....	trace.
Total		.....	350.22

Gases.

Carbonic acid,	cubic inches	363.77

No. 2. John H. Steele, analyst.

Saline, Chalybeate, Carbonated.

Sodium bicarbonate,	grains per gallon	.....	16.50
Calcium carbonate,	" "	.....	92.60

Magnesium bicarbonate,	grains	per gallon	40.92
Iron carbonate,	"	"	3.25
Sodium chloride,	"	"	281.50
Sodium iodide,	"	"	2.75
Silica,	"	"	1.50
Total,	"	"	439.02

Gases.

Atmospheric air,	cubic inches		6.80
Carbonic acid,	"	"	262.50

Sallston Spa Springs, Ballston, Saratoga County.

Sans Souci Spring. John H. Steele, analyst.

Saline.

Sodium carbonate,	grains	per gallon	12.66
Calcium carbonate,	"	"	43.41
Magnesium bicarbonate,	"	"	39.10
Iron carbonate,	"	"	5.95
Sodium chloride,	"	"	143.73
Sodium iodide,	"	"	1.30
Silica,	"	"	1.00
Total			247.15

United States Spring. L. C. Beck, analyst.

Saline, Carbonated.

Sodium carbonate,	grains	per gallon	16.88
Calcium carbonate (with iron oxide),	"	"	29.20
Magnesium carbonate,	"	"	5.76
Sodium sulphate,	"	"	1.76
Sodium chloride,	"	"	424.96
Silica,	"	"	8.00
Total	"	"	486.56

Gases.

Carbonic acid,	cubic inches		244.00

Artesian Lithia Spring. C. F. Chandler, analyst.

Saline, Lithium, Carbonated.

Sodium bicarbonate,	grains per gallon	.....	11.93
Calcium bicarbonate,	" "	.....	238.16
Magnesium bicarbonate,	" "	.....	180.60
Strontium bicarbonate,	" "	.....	0.87
Lithium bicarbonate,	" "	.....	7.75
Iron bicarbonate,	" "	.....	1.58
Barium bicarbonate,	" "	.....	3.88
Potassium sulphate,	" "	.....	0.52
Sodium phosphate,	" "	.....	0.05
Sodium chloride,	" "	.....	750.03
Potassium chloride,	" "	.....	33.28
Sodium bromide,	" "	.....	3.64
Sodium iodide,	" "	.....	0.12
Alumina,	" "	.....	0.08
Silica,	" "	.....	0.76
Sodium biborate, calcium fluoride, organic matter		....	traces.
Total		.....	1,233.25

Gases.

Carbonic acid, cubic inches	.....	426.114

Franklin Artesian Well. C. F. Chandler, analyst.

Saline, Lithium, Carbonated.

Sodium bicarbonate,	grains per gallon	.....	94.60
Calcium bicarbonate,	" "	.....	202.33
Magnesium bicarbonate,	" "	.....	177.87
Lithium bicarbonate,	" "	.....	6.78
Iron bicarbonate,	" "	.....	1.61
Barium bicarbonate,	" "	.....	1.23
Potassium sulphate,	" "	.....	0.76
Sodium phosphate,	" "	.....	0.01
Sodium chloride,	" "	.....	659.34
Potassium chloride,	" "	.....	33.63
Sodium bromide,	" "	.....	4.67
Sodium iodide,	" "	.....	0.24

Alumina, grains per gallon	0.26
Silica, " "	0.74
Strontium bicarbonate, sodium biborate, calcium fluoride, organic matter	traces.
Total	1,184.37

Gases.

Carbonic acid, cubic inches	460.066

Washington Lithia Well (Old Conde Deutonian). C. F. Chandler, analyst.

Saline, Lithium, Carbonated.

Sodium bicarbonate,	grains per gallon	34.40
Calcium bicarbonate,	" "	173.48
Magnesium bicarbonate,	" "	158.35
Strontium bicarbonate,	" "	0.19
Lithium bicarbonate,	" "	15.51
Iron bicarbonate,	" "	2.30
Barium bicarbonate,	" "	4.74
Sodium chloride,	" "	645.48
Potassium chloride,	" "	9.23
Sodium bromide,	" "	2.37
Sodium iodide,	" "	0.22
Alumina,	" "	0.40
Silica,	" "	1.03
Sodium phosphate, sodium biborate, calcium fluoride, organic matter		traces.
Total		1,047.70

Gases.

Carbonic acid, cubic inches	358.345

Deep Rock Mineral Spring, Oswego, Oswego County. S. H. Douglass, analyst.

Saline.

Calcium carbonate,	grains per gallon	18.19
Sodium chloride,	" "	308.18
Potassium chloride,	" "	149.08
Magnesium chloride,	" "	10.25

Silica, grains per gallon			71.70
Loss, " "			1.78
Iron oxide, sulphuric acid			traces.
Total			559.18

Verona Mineral Spring, near Verona, Oneida County. Peter Collier, analyst.

Saline.

Calcium carbonate,	grains per gallon		38.47
Calcium sulphate,	"	"	63.19
Sodium chloride,	"	"	562.89
Calcium chloride,	"	"	82.61
Potassium chloride,	"	"	4.06
Magnesium chloride,	"	"	27.11
Lithium chloride,	"	"	2.37
Silica,	"	"	0.59
Total	"	"	781.29

Massena or St. Regis Springs, Massena, St. Lawrence County. Ford F. Mayer, analyst.

Saline, Sulphuretted.

Calcium bicarbonate,	grains per gallon		4.85
Iron bicarbonate,	"	"	0.49
Sodium hyposulphate,	"	"	4.21
Sodium sulphate,	"	"	0.50
Calcium sulphate,	"	"	60.03
Sodium phosphate,	"	"	1.32
Sodium chloride,	"	"	76.79
Potassium chloride,	"	"	0.51
Magnesium chloride,	"	"	29.93
Magnesium bromide,	"	"	0.67
Sodium sulphate,	"	"	1.40
Organic matter (with silicate of soda),	"	"	11.18
Total,	"	"	191.88

Gases.

Sulphuretted hydrogen, cubic inches	5.307

(*To be continued.*)

ON TAKING FLUID WITH MEALS.—A great deal of misapprehension is often found to exist in the popular mind in regard to matters of eating and drinking; the cause of this to some extent is to be traced to old-time sayings, which have come down to us in the form of a concentrated infusion of somebody's opinion upon a subject of which he or she was wofully ignorant. One of these misapprehensions to which we may refer is as to the injuriousness of taking fluid with meals. One frequently hears it laid down as a maxim that "it is bad to drink with your meals, it dilutes the gastric juice." By way of explanation, we may remark that "it implies that the fluid taken is harmful." Whence this sagacious postulate originally came we cannot tell; it has quite the ring about it of an inconsequent deduction formed by a person whose presumption of knowledge was only exceeded by a lamentable ignorance of the subject. Medical men often find much difficulty in dealing with these museum specimens of antiquated science, for even educated persons are disposed to cling to the absurdities of their youth. Upon this matter Mr. Hutchinson remarks in the last number of his "Archives:" "I observe with pleasure that the verdict of general experience and common sense has been confirmed by scientific experiment in the matter of taking fluid with meals. Dr. Tev. O. Stratievsky, of St. Petersburg, after elaborate trials, has found that fluids materially assist the assimilation of proteids, and announces the following conclusion, which it is to be hoped no future experiments will controvert—on the whole, the widely spread custom of taking fluids during or just before one's meals proves to be rational and fully justified on strict scientific grounds. To take fluids with the meals is almost as important an adjunct to digestion as is the mastication of solid food preparatory to swallowing it." It is obvious, however, that there is a limit to the amount of fluid one can swallow with impunity—not to speak of comfort—just as much with meals as at other times. It would be dangerous to create a general impression that fluid is good with food irrespective of quantity. It is, moreover, a well-ascertained clinical fact that an excess of cumprandial fluid does retard digestion in certain people, and gives rise to discomfort in most. A little attention to one's sensations in such matters will far better

fix the desirable limit than all the "data" in the world.—*Medical Press and Circular.*

NOT ALTOGETHER HARMONIOUS.—The choir was singing a new arrangement of the beautiful anthem, "Consider the Lilies." The pure, sweet voice of the soprano rose clearly and distinctly in the solo :

"They toi-oi-oil not,
They toil not,
They toil not,
Ny-y-y-ther do they spin."

She paused, and the tenor took up the strain :

"Nee-ee-ee-ther do they spin.
They toi-oi-oi-oil not,
They toil not,
They toil not,
Nee-ee-ee-ther do they spin."

The tenor ceased, and the basso, a solemn, red-haired young man, with a somewhat worldly-looking eye and a voice like a fog-horn, broke in :

"Nay ay-ay-aythe do they spin.
They toi-oi-oi oil not,
They toil not,
They toil not,
Nay-ay-ay-aythe do they spin."

Then the voices of the three were lifted up in semi-chorus :

"Ny-y-y-ther
Nee-ee-ee ther
Nay-ay-ay-ther
do they spin.
They toi-oi-oi-oil not,
They toil not,
They toil not,
Ny-y-y-ther
Nee-ee-ee-ther
Nay-ay ay-ther
do they spin."

"Brethren," said the gray-haired, old-fashioned pastor, when the choir had finished, "we will begin the service of the morning by singing the familiar hymn, 'And am I yet alive?' "—*Chicago Tribune.*

MEDICAL MEN AND PREVENTIVE MEDICINE.

Abstract from Address on Public Medicine before the British Medical Association, at Bristol, August 3d, 1894, by Sir CHARLES A. CAMERON, F.R.C.S.I.

HE said they might claim that medical men stood pre-eminent among those who devised means for prolonging life and lessening sickness. They were the first to show that pure water was indispensable to health, that the efficient drainage of houses and of towns was a prime requisite to the maintenance of the health of communities, that overcrowding spread disease, if it did not develop it, and that the high mortality associated with many industrial occupations might be lessened by the adoption of certain precautions. The lives saved by the adoption of Jenner's sublime discovery of vaccination amounted to millions. In the government of modern communities the medical man played, even from a public health point of view, a very subordinate part, and yet there were many medical men eminently fitted, by their culture, experience, and ability, to hold the office of Minister of Public Health, aye, even with a seat in the Cabinet!

Mortality Rates in Town and Country.—In 1893 the mortality rate in the towns was 5.7 per 1000 in excess of that in the rest of the country. The difference between the rural rate and that in some of the towns was appalling. Why had one British town twice as high a mortality as another, and why was the average duration of life so much greater in rural districts than in the towns? The causes were no doubt highly complex, and many of them were local. Among the poor in all towns birth and death-rates stood highest. Their greater fecundity and high marriage-rates compensated for their enormous mortality. The poorer a man was the more likely was he to marry. It was a remarkable but undeniable fact that a man's desire for matrimony was in the inverse proportion to his ability to maintain a family. Figures showed the appalling mortality of the children of the poor. If the deaths of

children under five years of age were excluded, there would only be a difference of about 2 per 1000 between the town and country death-rates. A large proportion of the lower classes in the towns was underfed, insufficiently clothed, and badly lodged. These unfavorable conditions told most severely upon the very young. As higher death-rates prevailed among the poor than obtained in the case of the well-to-do classes, an undue proportion of very poor people in a town necessarily caused a higher death-rate than where the poor were comparatively few. This would be the case even where the general hygienic conditions of both towns were much alike. It might be considered that the comparative poverty of towns might be to some extent determined by ascertaining the proportion of the population who were domestic servants. On the whole, they found that in the towns where the domestic servants were very numerous the death-rates were low. The percentage of tenements which consisted each of a single room might, one would suppose, offer an indication of the poverty of a town. He found, however, the most extraordinary differences in towns, salubrious and otherwise, as regarded one-room tenements. In the Scotch towns one-roomed houses were even more common than in England.

In Dublin one third of the families lived in single rooms. The high death-rate which characterized the denizens of single-room dwellings was largely the result of the miserable conditions of the people themselves, apart from the state of their dwellings. If they exchanged their one-roomed dwellings for four-room tenements, they would still have a high death-rate by reason of their poverty and its concomitant evils, and, he feared, from their intemperance. It was to be regretted that the local authorities still allowed such houses to be built. In Dublin they could not be erected, a by-law directly prohibiting their construction. In Dublin, 2700 houses had been detenanted and closed—about 1000 of them never to be reopened, without any compensation to the owners. If a municipality were wealthy it could do no better work than providing good dwellings for the artisans and laborers; but if its means were limited, it should look only to the wants of the laboring and still poorer classes. It was in the dwellings of the very lowest classes that the seeds of infective disease

were nursed as if in a hotbed. These places were pest spots, and any amelioration of their condition must be a gain to society at large. The corporation of Dublin had been able to provide two-room tenements with separate sanitary accommodation of the most modern style, at 2*s.* per week, and without loss to the city treasury.

Water Supply.—The disuse of town wells and the filtration of public water supplies had done much to lessen the urban mortality. The value of filtration through mere sand had until recently been underestimated; but the researches of chemists and bacteriologists had shown that filtration through sand and gravel can be made almost as perfect as through charcoal. The great importance of water filtration was painfully demonstrated during the last epidemic of cholera at Hamburg. They had not yet determined, in relation to chemical analysis, the line which divided a bad from a good water, nor did he believe that such a line could be drawn. One that contained very little organic matter might be dangerous to drink, while, on the contrary, water with a large amount of organic matter had been drunk with impunity for years. The number of micro-organisms in water was regarded by most bacteriologists as a measure of its purity, regardless of its chemical composition. The epidemic of enteric-fever in the Sees Valley in 1890 and 1891, investigated by Dr. Barry, of the Local Government Board, had been held to prove conclusively that this disease was propagated by water. Dr. Barry's conclusions had, of course, been questioned and controverted.

Sewer Air.—The results of recent investigations in reference to the composition of sewer air showed that it was superior, bacteriologically at least, to ordinary air. They could easily understand that in the case of well-constructed and constantly flushed sewers, the air in them would not differ from ordinary atmospheric air. It was the emanations from stagnant sewage in ill-kept sewers that were to be dreaded. The ventilating openings in the streets were generally objected to by those who lived opposite to them. Bristol was, perhaps, the only one of the large towns in which the sewers remained unventilated. As typhoid-fever was asserted the most likely to be produced by sewer emanations, Bristol ought to have more

than an average amount of disease, if the sewer ventilation theorists were correct. Statistics of the mean death-rate from enteric-fever, in the period 1887 to 1891, showed that five towns had smaller rates than Bristol, and forty-four had higher. If Bristol had made a mistake in not ventilating its sewers, it had not apparently paid any penalty, for in the period 1881 to 1890 only one of the large towns had a lower zymotic death-rate. He should feel disposed to adopt the Bristol plan, were it not that there might be some difficulty, in some towns at least, in cleansing the sewers. Typhoid-fever was not so prevalent in these countries or on the Continent as it formerly was, but in some towns typhoid-fever had not declined, and in a few it had increased. There was a very general belief that this disease was almost wholly propagated through the media of water, food, and sewer air ; but he believed that the greater number of cases arose from the *materies morbi* of the disease being absorbed from the air. Up to the present, pathogenic micro-organisms had not been frequently detected in the atmosphere, but neither had they been found, except rarely, in water or milk suspected to have produced disease. He believed that typhoid-fever was a disease of the miasmatic class, and that it became endemic in certain localities in which the conditions of the soil were favorable to the development of the micro-organisms which caused the disease. It had been suggested that the water-logged condition of Dublin was the cause of the prevalence of typhoid-fever, and that the obvious remedy was subsoil drainage. It was, however, a fact that the low-lying portion of Dublin, where there was most typhoid-fever, was not damp, and that the ground-water lay low there, and that in the parts where the ground-water came much nearer to the surface there was least typhoid-fever. The explanation of this was not difficult. The cold, wet clays were unfavorable to the bacillus of the disease, whereas they had better feeding-ground in the loose and well-aërated gravels. It was stated that typhoid prevailed most among the upper classes. This was not the case in Dublin.

The Future of Preventive Medicine.—The domain of public medicine was steadily enlarging in every direction. Surely the time must come when the results of these researches

would enable man to extirpate some or all of the diseases which even now were termed "preventable." England had been described by foreigners as the birthplace and home of sanitary science, and it surely deserved the compliment. Never before in the history of the world were 30,000,000 people located on 50,000 square miles, as was the case with the England of to-day. Of these millions two thirds resided in the towns, which yearly had a quarter of a million added to their teeming population. In Germany 42 per cent of the population lived in towns containing 2000 and upward. Only every tenth Russian lived in a town. Notwithstanding the great and continuous increase in its urban population, Great Britain grew healthier and healthier from decade to decade.

Professor Corfield, of London, moved that the thanks of the meeting be given to Sir Charles Alexander Cameron for his able and interesting address. It was due to Sir Charles that typhus had been so effectually grappled with in Dublin, for it was through his efforts that the insanitary dwellings which were the hotbeds of the disease had been swept away by hundreds. The same reason accounted for the failing power of the disease in Liverpool. At the same time there was the matter of the increase of diphtheria. Many causes were attributed to this, and among those which found most favor with the officials of the Local Government Board were the street ventilation of sewers, and the increased aggregation of children in schools. Alluding to the probable dispensing with vaccination, the speaker said that the opposition to this by the medical profession had been attributed to their desire to protect fees, but he prophesied that if vaccination became non-compulsory the public would require half as many again medical practitioners as existed to-day.

Dr. Davies (the Medical Officer of Health of Bristol) seconded the resolution, which was carried by acclamation.—*From the Medical Record, August 23d,* 1894.

OXYGEN.

ABSTRACT FROM "THE LIQUEFACTION OF GASES."*

OXYGEN may be regarded as the leading terrestrial element. It forms eight ninths by weight of water, one fifth of the earth's atmosphere, and about one half of its rocky crust. There is, however, no certainty that it exists at depths exceeding, say, 30 miles. Oxidation is more likely to have been limited to the superficial layers of the cooling globe than to have extended to its interior. More significant to ourselves are the facts that our bodies are mainly composed of this normally aërial substance; that they are largely nourished and wholly vitalized by it. Oxygen is in great demand in the economy of nature. Most other chemical elements crave for union with it, and once they have laid hold of it, they do not readily let it go. If ever present, then, in lunar air and oceans, it may very well have been long ago "drunk up" by chemical action. Extra-terrestrially, it occurs certainly in meteorites, and probably in some of the planets; but neither sun nor stars give any sign of being supplied with it. Dusky bands caused by its absorption are, it is true, included among the hieroglyphics inscribed on the solar spectrum; but their strictly telluric origin has been demonstrated by M. Janssen, who ascended Mont Blanc for the second time last September with a view to studying their progress toward extinction with elevation in the earth's atmosphere. The upshot was to show that, outside its limits, no trace of them would be left. They are, then, of domestic production. The sun has nothing to do with them.

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* *Edinburgh Review.*—1. The Chemical Work of Faraday in relation to Modern Science. Lecture delivered at the Royal Institution, June 26th, 1891. By Professor Dewar, M.A., F.R.S.

2. Magnetic Properties of Liquid Oxygen. Lecture delivered at the Royal Institution, June 2d, 1892. By Professor Dewar, M.A., F.R.S.

3. Liquid Atmospheric Air. Lecture delivered at the Royal Institution, January 20th, 1893. By Professor Dewar, M.A., F.R.S.

4. The Scientific Uses of Liquid Air. Lecture delivered at the Royal Institution, January 19th, 1894. By Professor Dewar, M.A., F.R.S.

These atmospheric bands and rays are common to the spectra of aërial and liquid oxygen. The same prismatic elements, conspicuously absent from the light of the setting sun, are cut out of an electric beam which has traversed a couple of inches of liquid oxygen. This identity, partially shown by M. Olszewski in 1887,* was completely ascertained by Professors Liveing and Dewar in 1889. It proves, not only that the molecules of oxygen undergo no modification of structure in liquefying, but that a nine-hundredfold condensation, combined with the restraints of cohesion, leaves them free to execute their characteristic vibrations. This "persistence of molecular constitution," Professor Dewar remarks, is the more noteworthy when it is considered that "no compound of oxygen, so far as is known, gives the absorptions of oxygen." Not even ozone, a compound of oxygen with itself, yet showing a radically different spectrum. Liquid ozone is intensely blue. Dissolved in liquid oxygen, it changes its clear tinge to pronounced indigo, and there can be no question but that its formation as a gas in the atmosphere must tend to deepen the blue of the sky. This, however, is probably only a subsidiary effect. The fundamental explanation of the celestial azure is to be found—according to the opinion of M. Olszewski, with which Professor Dewar cordially agrees —in the true, native color of oxygen. And its color inevitably results from the preponderance given to the blue end of its spectrum by its stoppage of many red, yellow, and orange rays.

The liquefaction of oxygen by two independent investigators, Pictet, of Geneva, and Cailletet, of Paris, was announced to the French Academy of Sciences on the same day of December, 1877.† Unknown to each other they had been working for several years along parallel lines. Their success was, indeed, determined by the use of an identical method. The gas, loaded with the weight of five or six hundred atmospheres at a temperature of about —130° F., was then suddenly allowed to escape through a narrow aperture. The ensuing violent expansion consumed a large quantity of heat,

* Wiedemann's Annalen, Bd. xlii., p. 663.

† Comptes Rendus, t. lxxxv., pp. 1214, 1217.

the abstraction of which from an adjacent portion of the same substance cooled it to the point of condensation, and liquid oxygen was for the first time seen on our planet. But only in a thin jet and during a few seconds. Its capture for examination was out of the question.

More tangible results were obtained in 1883 by the Russian chemists Wroblewski and Olszewski. Their liquid oxygen was no mere momentary vision, but submitted to rule and measure in a capillary tube. Its qualities could thus be studied to advantage, and the inquiry led to the acquisition of much valuable information regarding modes of procedure at low temperatures.*

These have of late in the laboratory of the Royal Institution been carried to an extraordinary degree of perfection. The experiments conducted there are not only on a totally unprecedented scale, but give evidence of remarkable sagacity in the adaptation of means to an end. Professor Dewar has been occupied with them during at least ten years, but their striking results were first made known to the general public on the occasion of the Faraday centenary in 1891. The numerous audience collected in the theatre of the Royal Institution on Friday evening, June 26th of that year, were amazed to see liquid oxygen freely on tap and drawn off, to a vulgar apprehension, *smoking hot*. In point of fact it was boiling at a temperature of —296° F. (328° of frost), its steaming appearance being due to the conversion of the moisture in the surrounding air into ice particles through contact with the swiftly escaping gas. When cleared, by filtering through blotting-paper, of some fine dust of solid carbonic acid, it wore the aspect of limpid light blue water. A few drops of it thrown, however, on a genuine water surface fizzed and sputtered like red-hot iron plunged into a cool stream ; and presently each was seen floating about in a self-made little cup of ice. Some alcohol poured into the mysterious fluid became promptly a solid block. Yet alcohol resists the sternest Arctic rigors, freezing, indeed, only at —202° (—130° C.). Removed from the oxygen, it thawed into a viscid substance, which could not be induced to burn until it had taken up heat

* Wiedemann's Annalen, Bde. xx., xxxi., xlii.

enough to restore it to its normal consistence. The chemical inertness produced by extreme cold was further illustrated by the immersion of a piece of phosphorus in liquid oxygen. No vivid outburst of light was visible, such as marks, at ordinary temperatures, the molecular rush together of these two eagerly uniting elements. The phosphorus remained no less indifferent than cold steel is to the contact of cold water.

The critical temperature of oxygen is —171° (—113° C.). Above that point it remains obstinately gaseous; interstitial movements are too active to permit its molecules to lay hold one of another. Nitrogen is still less amenable, its corresponding stage being reached only at the deeper depth of —233° (—147° C.). Such cold is unattainable by direct means; the intervention of liquid oxygen is required to produce it. The principle of its employment is easily explained. Mountaineers know by experience that no good tea is to be had at high altitudes, because water cannot be sufficiently heated to infuse it properly. On the summit of Monte Rosa, the boiling point is reduced from 212° at sea-level to 185°. The change is simply an effect of diminished atmospheric pressure, and can accordingly be brought about by a few strokes of an air-pump with less exertion than by an ascent of 15,000 feet. Now, boiling oxygen, like boiling water, is colder in vacuo than in the open air—so much colder, indeed, that a temperature of —328° is afforded by it, and this suffices to liquefy, not only nitrogen, but also atmospheric air. On June 2d, 1892, the singular spectacle was witnessed during one of Professor Dewar's lectures, of common air, more than ordinarily warm and elastic owing to the heated state of the room, trickling spontaneously into an open vessel surrounding a test tube in which oxygen was boiling under exhaustion. Air, we need scarcely say, is a mechanical mixture of four parts of nitrogen with one of oxygen; and the latter, being the less refractory to cold of the two ingredients, might have been expected to condense first. Yet things happen otherwise. The two gases liquefy together, but evaporate separately. The nitrogen boils off on its own account, leaving almost pure oxygen behind. Somewhat similarly, sea water freezes without depositing the salts dissolved in it, but abandons them in vaporizing. The analogy is indeed far from

being complete; yet it serves to show that the behavior of the gases is not quite so anomalous as, at first sight, it appears.

Professor Dewar's crowning achievement, so far, has been the solidification both of air and nitrogen. A substance visually undistinguishable from ice results in each case. Unmixed oxygen refuses to freeze. Not, we may be sure, because it is incapable of assuming the solid state, but because the requisite conditions have still to be found out and produced. The incongruity is, however, noteworthy between the facility, comparatively to nitrogen, with which it liquefies, and the difficulty with which it solidifies.

And now, we may well ask ourselves, how has all this been accomplished? For surely Professor Dewar cannot, like the pedestrian soul of Elpenor, have crossed unsuccored the ocean stream that lay between him and the "regions of thick-ribbed ice" to which he has penetrated. What "white-winged ship," then, has been at his disposal? Which of the Olympians has aided him to distance his competitors in the race toward the goal of absolute cold? The business was an arduous one. Intellectual, moral, and material resources were needed for its prosecution, and needed without stint. In point of scale alone, a prodigious advance has been made. Only a few years ago a capillary tube held all the oxygen that could be liquefied at one time; and our professor himself was content to experiment upon a mere fairy thimbleful of a substance which, for rarity, might vie with "a hair from the great Cham's beard." Now it can literally be manufactured by the hogshead. At a high cost, certainly. We much doubt whether—making allowance for the outlay on the "plant"—any profit could be derived from selling it at £100 a gallon; and a couple of gallons are often consumed in the researches of a single afternoon.

The most powerful apparatus ever employed in pneumatic chemistry has been erected under Professor Dewar's superintendence in the laboratory where Davy and Faraday did their memorable work. It includes one gas, and two steam-engines, four steel compressors, a couple of large air-pumps, with wheelwork, shafts, and couplings *quantum suff.* The inner organic details of this machinery, however, conceal the

real secret of its efficiency. They have been thought out and perfected by the application of uncommon inventive talent combined with pertinacious industry. Mental concentration has translated itself into a convergence of ingenious devices upon a single object.

The principle of the method adopted for securing its realization is that of lowering boiling points by exhaustion. Choice is made of a series of substances more and more difficult to liquefy, and each in turn is enlisted for the service of vanquishing the recalcitrance of its fellows. Thus, by successive gradations, the startling temperature of —346° (—210° C.) has been reached. The process (generally abridged in practice) begins with the freezing of carbonic acid through the rapid evaporation of ether. Carbonic acid boils under atmospheric pressure at —112° (—80° C.), but by compulsion of the air-pump at —166°. Nitrous oxide, at this stage of the descent, surrenders at discretion, and, boiled in vacuo, affords the means of liquefying ethylene, which, similarly treated, runs down the temperature to —229° F. Here at last the almost irrepressible activity of oxygen particles is so much reduced that a pressure of 1500 pounds to the square inch avails to bring them within the power of cohesion. The accelerated evaporation of liquid oxygen gives cold enough to liquefy air and nitrogen; and these, again, worked upon in double receivers by two potent air-pumps, combine their refrigerative forces to produce solid nitrogen—an experiment successfully performed for the first time in public on January 19th, 1894. It seems for the present to mark the *ne plus ultra* of what can be done by artificial cold. One further exploit remains; but the time is not yet ripe for its accomplishment. The liquefaction of hydrogen cannot be attempted with the methods actually in use, or likely in the immediate future to be realized.

The most indispenable of Professor Dewar's cold-producing agents is ethylene, a specimen of which was exhibited by Faraday in 1845. It is a compound of hydrogen and carbon, prepared by treating alcohol with strong sulphuric acid. At the Royal Institution it is now manufactured a hundredweight at a time, notwithstanding the "hairbreadth 'scapes" by which the operation is attended unless the most delicate precautions are observed. For it is highly explosive, and the

slightest leakage of the pipes through which it is conducted may at any time lead to a dangerous accident. None the less, its services are indispensable, and are availed of to the utmost. Each fresh supply is made to do duty over and over again, by being put through an incessant round of alternate liquefaction and evaporation ; and nitrous oxide has a similar course of cyclical duty imposed upon it.

Professor Dewar's experiments upon liquid oxygen were, to begin with, gravely hampered by the violence of its ebullition. No single particle of it remained a moment at rest. Determinations of its qualities were as impracticable as would be delicate astronomical observations through the undulating vapors close to the horizon. But difficulties are often only a spur to invention ; and they here resulted in the important contrivance of "vacuum vessels" for preserving fluids at equable temperatures. Air molecules are indefatigable carriers of heat. On every square inch of cold surface exposed to bombardment by them, they strike in billions per second, and each, as it retires, leaves behind some minute portion of its own thermal store. By hindering their access, however, the process of temperature equalization can be virtually arrested. Hence, liquid oxygen, protected by a "vacuum jacket," shows no signs of agitation, but evaporates quietly from the surface with no very sensible waste. The vacuum is produced in the outer shell of a double receiver, from which every trace of air has been expelled on the Torricellian plan. By then freezing out the excess of mercury, an extraordinarily high degree of exhaustion can be reached. The pressure of mercurial vapor—the only form of matter remaining in a bulb thus treated—amounts to no more than the four hundred-thousandth part of a millionth of a millimetre. Yet the exterior application of a pad of cotton wool steeped in liquid oxygen promptly condenses this evanescent remnant of metallic gas into a bright mirror, just as moisture deposits itself in ice on the inside of a window pane during a night of hard frost. Through the nearly absolute void in the mirror-coated bulb an electric discharge can with the greatest difficulty be made to pass ; and the difficulty might not improbably amount to an impossibility could the sparsely strewn surviving molecules be swept away. Enclosed in such vacuous spaces,

liquid oxygen is virtually proof against the attacks of heat; and experiments upon its peculiarities can be conducted with ease and at leisure.

The virtual immutability with change of state of the absorptive action upon light of gaseous oxygen corresponds with the persistence of its other qualities. After liquefaction it is as bad a conductor of heat and electricity as before, and has lost nothing of its thermal transparency. In one of Professor Dewar's striking experiments, a spherical vessel filled with liquid oxygen was made to act as a burning glass. The beams from an electric arc, brought to a focus by its refractive influence, actually ignited a piece of paper held there, while leaving the frigid lens traversed by them unaffected by so much as a momentary quickening of ebullition. Thus, radiant or ethereal heat encounters no resistance in passing through oxygen, although molecular heat, which can only creep along from particle to particle, finds the way barred almost at the outset.

Again, gaseous oxygen was known to be magnetic; but it was very far from being anticipated that liquid oxygen would prove to be still more so. On December 10th, 1891, Professor Dewar placed some of this substance in a rock-salt cup between and just below the poles of an electro-magnet. No sooner was the circuit completed than, to his ineffable surprise, the liquid sprang in one mass to the poles, and remained attached to them to the last drop left by its speedy evaporation. Cotton wool moistened with oxygen clung on with equal tenacity, until sucked dry by their overmastering attraction for its contents. The magnetic capability of liquid oxygen is, indeed, only one thousandth that of iron; yet its discovery is of far-reaching consequence.

Liquid air appears to possess no distinctive qualities. It is magnetic just in proportion to the amount of oxygen entering into its composition; its spectrum is that of oxygen, weakened; its color is that of oxygen, attenuated. The part played by nitrogen is that of a simple diluent. Nitrogen is the most indifferent of substances. Its characteristics are mainly negative. It refuses to conduct heat or electricity, but it allows radiant heat and light to pass without exacting any dues of absorption. Chemically inert, it combines even

with oxygen only under the stress of electric excitement. Were it otherwise, it could not discharge the function of neutrality assigned to it in our atmosphere. In every thunderstorm, it is true, a small quantity of nitric acid is formed, which, carried to the ground by rain, and absorbed by plants, helps to supply the nitrogenous foodstuffs indispensable for the maintenance of animal life. This fertilizing action of electricity is of recent detection. It might be deemed superfluous, were vegetable organisms capable of appropriating nitrogen directly from the air; but, as a matter of fact, they derive from the soil their stores of this much-needed material.

The magnetic quality of liquid oxygen is no isolated phenomenon. Susceptibility to this particular kind of action grows steadily and generally, so far as is yet known, with decrease of temperature. The cause of its growth with great cold is as little known as the cause of its decline with great heat. It is a familiar fact that iron at a temperature of about 1400° is no more magnetic than timber or glass; and nickel ceases at 340° to respond to the most powerful magnet. The theory that the sun is the centre of a vast magnetic field thus encounters a serious difficulty in its enormously heated condition.

The effects of cold upon color are extremely curious. At —314° sulphur turns white; the intense yellow of bichromate of potash vanishes; vermilion fades to pale orange.; ferric chloride loses its deep red, a solution of iodine in alcohol its rich violet. With the return of heat, however, all these substances fully regain their former hues. Blue tints, no less than organic colors of every shade, appear indifferent to temperature. In this novel and interesting field of research, Professor Dewar has up to the present made only a few pioneering experiments. Their results could not possibly have been foreseen, and stand isolated from previously ascertained facts. Yet they are not unlikely to mark, in future retrospects, the beginning of a new era in the science of chromatics.

Nor could it have been anticipated that life, albeit in its humblest forms, could survive a plunge to the frigid depth where oxygen simmers in a vacuum-coated vessel. Nevertheless, the spores of microbes and the seeds of many plants have been exposed by Professor McKendrick to this searching

ordeal without detriment to their vitality. Plausibility has thus apparently accrued to Lord Kelvin's fanciful surmise as to the meteoric origin of life on our globe. For it can no longer be maintained that germs contained in or adhering to meteorites must necessarily have perished in the cold—approximating, however closely, to absolute zero—of interstellar space. 'Other objections equally formidable with the one disposed of might, indeed, be raised. But the speculation is no more than a toy of thought. It would be breaking a butterfly on a wheel to attack it seriously.

DARKENED SLEEPING ROOMS.—It is claimed by some physicians that the brain cannot rest perfectly unless all light is excluded from the sleeping-room, and whether in going to bed at night or simply lying down for a half-hour's rest in the middle of the day, this precaution should be taken. Where a house has an eastern or southern exposure the rooms will be filled with light long before it is time to get up, and unless some means be taken to prevent, the morning rest will be more or less broken. Especially is this true in the case of little children, and it is well to accustom them from the first to sleep in the dark.

In the absence of outside blinds there is no better way to secure this pleasant twilight so conducive to rest than by the use of inside shades made of the darkest green holland, and they have a great advantage over either inside or outside blinds in that they are so easily adjusted.

They supplement but do not take the place of the ordinary shades, but are set somewhat inside, so as not to interfere with them, and are rolled up and quite out of the way when not in use.

The best grades of this goods are durable, and with reasonable care will last for years, and from her own experience the writer can recommend them as a most desirable investment.

If the bedroom windows have upper panes of stained glass in which so many modern houses abound, the green shades should be set so as to cover these also, as an exceedingly unpleasant glare pours down from them, very trying to eyes which are trained to sleep in a darkness as complete as possible.—*From Harper's Bazar.*

THE MEDALS, JETONS, AND TOKENS ILLUSTRATIVE OF SANITATION.*

By Dr. H. R. STORER, of Newport, R. I.

XI. *Military and Naval Hygiene.*

THE UNITED STATES.

In addition to the medal of Dr. B. F. Stephenson, No. 2055, there is another.

2300. Obverse. Military bust, to right. Beneath shoulder: Childs Chicago Inscription, upon two thirds of an arc of a circle: Dr. B. F. Stephenson Founder Of The G. A. R.

Reverse. Malleable, | Tasteless, Sonorous, | Ductile, | Untarnishable, | (rosette) Aluminum (incused and between chased lines) (rosette) | Cubic Foot Of Gold, 1204 Lbs. | " " Aluminum 179" | This Medal | Is Pure. | Childs Chicago. Aluminum. 24. 37 mm. Edge of reverse milled. Storer, *American Journal of Numismatics*, January, 1893, p. 55, No. 522[a]. In my collection.

2301. Obverse. Within circle, the Geneva Cross, red enamelled. Inscription: Prompt Aid To The Injured | * N. G. S. N. Y. * (National Guard State of New York.)

Reverse. Sterling | Black Starr & Frost N Y | 1370 (incused) Silver. 20. 32 mm. *Ibid.*, July, 1893, p. 10, No. 621. I owe the description to Mr. L. H. Low, of New York.

HOLLAND.

I have been unable until now to describe the medal, No. 1293[a], of the Countess von Ross, of Amsterdam, who spent fourteen years as an army nurse.

(1293[a].) Obverse. Bust, transfixed by lightning and beneath a crown of stars. Below shoulder: Loos Inscription: Joh. Cath. Gravinn V. Ross, Geb. De Schubert. Geb. d. 10 Decemb. 1772 | Gest. d. 25 April 1814 Exergue: In Magnis Voluisse Sat Est. Above, within an irradiated circle of serpents, a pelican and young resting upon a cross, trumpet, palm leaf, flowers, and the arms of Ross and Schubert.

* Concluded from page 240.

Reverse. Between palm and laurel two stones, upon which A P W Beneath : Het | Vaderland | Helpen Bevrijden | En Menschen Rampen | Verminderen | Was Het Beroep Warin | Zij Stierf Before an irradiated pyramid surmounted by scales and the all-seeing eye, a recumbent lion, holding in left paw a bundle of arrows and in right a sword ; behind, the British coat of arms ; at sides, a crowned double eagle and a single-headed one. At left of the lion, three banners, inscribed : Vertrouwen—Religie—Volharding. To the right, three other banners with : Moed—Offer—Eendragt All rest upon palm leaves, flowers, and orange branches. To right, a recumbent sheep ; to left, an escaping crocodile. Below : Aan Alle | Edelen Haares | Geschlachts. Silver. I owe the description to Dr. J. J. B. Vermyne, of New Bedford.

BELGIUM.

I am now enabled to give the description of No. 2062.

(2062.) Obverse. Within a beaded circle, St. Michael and Lucifer. Beneath : Wurden

Reverse. In field : Souvenir | De L'Inauguration | Du | Monument | Elevé A Bruxelles | A La Memoire | Des Soldats Français Morts | A La Suite De La.Guerre | De 1870—1871 | — | 21 Nov. 1880 | (two superimposed triangles, at whose sides A—B) Inscription : La France A Ses Soldats | * La Belgique Leur Fut Hospitaliere * Bronze. 20. 30 mm. In my collection.

FRANCE.

Dr. René Joachim Henri Dutrochet (1776–1847), of Paris. Military surgeon.

2302. Medal by David d'Angers. Jouin, *loc. cit.*, p. 248, No. 578.

2303. Obverse. Laureated head, to right. Beneath : Albert Barre Inscription : Napoleon III Empereur

Reverse. Within flowering branches bound together : Pour Les Soins Donnes Aux Blesses Français Exergue : * 1859 * Bronze. 32. 50 mm. In my collection.

No. 1406 was but imperfectly described.

(1406.) Obverse. Three men raising a wounded soldier, to place him in an ambulance at the right. Beneath, to right : Guerchet Exergue : the Geneva Cross.

Reverse. Le Comite | Des Ambulances | De La Presse Française | A | M^r^ Thiers | Chef Du Pouvoir Executif | Pour La Haute Protection | Qu'il A Accordée | Aux Ambulances | De La Presse | 1871 Silver. 24. 37 mm. Edge of reverse beaded. In my collection.

2304. Obverse as preceding.

Reverse. Within beaded circle, the French and Geneva flags, crossed. Beneath: Ambulances | De La Presse | —.— | 1870—1871 Inscription: Annexes Du Ministere De La Guerre Exergue: a star. Bronze. 24. 36 mm. It differs from No. 1430 in being circular. In my collection.

GERMANY.

2305. Obverse. Within field: Turnau | Munchengrätz | Gitschin Inscription: I.U.Elb.Armee | 26.27.29. Juni.

Reverse. Upon a Maltese cross within laurel and oak branches: Mit | Gott | Für König Und | Vater | Land | 1866 Inscription: Dank Preussischer Invaliden Silver. 10. 15 mm. Donebauer, *loc. cit.*, p. 610, No. 5252, fig. .

XIII. *Climate.*

HOLLAND.

The Hague Society for Acclimation.

2306. Obverse. Koninklijk | Zoologisch Botanisch | Genootschap | Van | Acclimatatie | Te | 's Gravenhage | — | Geopend 15 Junij 1863 | WP (in monogram) & Z(oon). (W. Pauwels & Son.)

Reverse. A wreath of laurel and oak. Bronze. 32. 43 mm. Dirks, ii., p. 249, No. 886.

XIV. *Life Insurance.*

2307. Obverse. Bust, facing. Inscription: John A. McCall President New-York Life Insurance Co.

Reverse. An eagle feeding two young in its nest. Beneath, laurel branches tied by ribbon. White metal. 32. 50 mm. By Gorham Manufacturing Company.

XV. *Hospitals.*

SOUTH AMERICA. *Argentine Republic.*

2308. Obverse. Within laurel wreath, with star above: An Frau Luisa Ocampo De Bemberg. Inscription: Der Deutsche Hospital Verein Zu Buenos Aires * Concert 17 August 1870 *

Reverse. A book, upon which: Charitas, wreathed by flowers and surmounted by star. Instruments of music, etc. Bronze. Rosa, *loc. cit.*, p. 506, No. 1532.

ENGLAND.

Guy's Hospital.

Besides No. 1582 there are

2309. Obverse. Head, to right. Beneath neck: Leonard C. Wyon. Inscription: Golding Bird M.D., F.R.S. | Guy's Hospital 1843—54

Reverse. Within laurel branches: The | Golding Bird | Prize Medal | Founded | 1887 Inscription: For Proficiency In Methods Of Diagnosis Gold. 30. 46 mm. Storer, *American Journal of Numismatics*, April, 1893, p. 83, No. 605. I have impressions in wax, through the courtesy of Mr. C. H. Golding-Bird, of London.

2310. Obverse. The hospital. At its entrance two men with a stretcher. In front, a man upon the ground, who is being raised by another, who points toward the hospital. Beneath: L. C. Wyon F.

Reverse. Within a wreath the hospital arms, with motto below: Dare Quam Accipere Inscription: From The Treasurer of Guy's Hospital | For Clin:Surgery Gold. 32. 49 mm. I have the description from Mr. A. H. Lyell, of London.

2311. As preceding, save upon reverse: For Clinical Medicine Gold. 32. 49 mm. Communicated to me by Mr. Lyell.

2312. Obverse. Female, with three children. Legend: Dare Quam Accipere Exergue: Warwick

Reverse. Laurel wreath. Inscription: Guy's Hospital Bronze. 18. 30 mm. I have the description from Dr. F. P. Weber, of London.

2313. Obverse. Bust, facing and to right. Inscription: Thomas Guy. Founder Of Guy's Hospital | 1720

Reverse. Within field: To | | Certificated Nurse | On Completing | Five Years | Service Inscription: Medal Instituted By Joshua Batterworth F.S.A.A. Governor Exergue: 1889 Silver. 20. 31 mm. I have impressions from Dr. A. E. Tyng, of Chicago.

St. Thomas's Hospital.

Besides Nos. 1587, 1588, and 2096, there is another.

2314. Obverse. Statue of Edward VI., in cap and cloak, facing with right hand outstretched. Legend: Fundator Nosocomii (in German letters). Exergue: mdliii (1553)

Reverse. The Hospital Arms. Legend: Bene Merito, Melius Merituro (in German letters). Within field: E Dono Quaestoris Ad(etc.) 18— (engraved. Presented to ——— for general proficiency and good conduct during his course of studentship, by ———, treasurer of St. Thomas' Hospital, 18— .) By Allen & Moore, 1848. Gold. 33. 52 mm. I have the description from Mr. A. H. Lyell, of London.

HOLLAND.

Children's Hospital, Utrecht.

2315. Obverse. A sick child in bed.

Reverse. Puss in boots, a Chinaman, and a girl, holding shield, upon which: Poppen Tentoonstelling | 1889 Gold, silver, bronze, composition. A doll exhibition for the benefit of the hospital. Communicated to me by Dr. J. J. B. Vermyne, of New Bedford.

BELGIUM.

2316. *Brussels.* "Fete au profit des enfants rachitiques." 26. 40 mm. Dupriez, Cat. 18, 1893, No. 627.

2317. Obverse. Building with two courts. No inscription.

Reverse. Gulliemo I. | Belgarum Rege. | Curantibus F. De Page. | J. De La Coste, J. De Snellinck, | F. De Freins, | Th. Van Rynegom De Buzet, | G. Marcq, Ch. J. De Liagre, | J. G. Diert De Kerckwerve, J. D. Kockaert Et J. F. De Strooper, | Hoc Hospitium | Senibus Excipiendis | Aedificatum | A. L. P. | Praet. Urb. L. De Wellens | A.

MDCCCXXIV. | Partoes Aed. Arch. Silver. 21. 33 mm. In my collection. This infirmary is at Brussels.

2318. *Ghent.* "Maison de Santé cellulaire." 1858–61. 38. 60 mm. *Ibid.*, No. 637.

FRANCE.

Hospice de la Reconnaissance, at Garches, near St. Cloud.

2319. Obverse. Head, to left. Beneath: Emile Rogat | 1834 Inscription: Michel-Brezin

Reverse. Né Le 28 9^{bre} 1758 | Mort Le 21 Jan^{er} 1828 | Legateur | De Cinq Millions De Francs | Pour La Fondation | De L'Hospice | De La Reconnaissance | En Faveur | Des Ouvriers Fondateurs Serruriers | Et Forgerons Mécaniciens | Agés Ou Infirmes. Bronze. 26. 42 mm. In my collection.

Hôpital Des Enfans Trouvés.

2320. Obverse. Bust, to right. Beneath: Fauginet F. Inscription: St. Vincent De Paul.

Reverse. Within oak wreath: Né A Ranquines (Landes) 1576 (etc., etc.) Fondateur De L'Hopital Des Enfans Trouvés 1648 (etc.) De L'Hopital De La Salpetrière 1658 (etc.) 32. 50 mm. *Méd. Fr. du Musée monetaire*, p. 500, No. 45.

Hôpital De La Salpetrière. See preceding.

Besides the medal already given, No. 1511, of St. Vincent De Paul, founder of hospitals, there are the following:

2321. Obverse. Bust, to left. Beneath: E. Gatteaux. Inscription: Vincent De Paul

Reverse. Né A Pay Près Dax En M.D. LXXVI. Mort En M.DC.LX. | — | Galerie Metallique | Des Grands Hommes Français | — | 1821. *Ibid.*, p. 524, No. 114.

2322. "Les Disciples de Saint Vincent De Paul." 5820. (1820.) (Masonic.) Marvin, *loc. cit.*, No. 153. In my collection. 2323. As preceding, but without date. (Masonic.) *Ibid.*, No. 154.

Hôtel Dieu.

2324. Obverse. Head, to left. Upon neck: Armand Inscription: Avenement De Charles X— Au Trone Le 16 Sept. 1824.

Reverse. Le Roi Accompagné | De M^{eur} Le Dauphin | Visite L'Hotel Dieu | De Paris | Le 6 9^{bre} 1824. Bronze. 26. 41 mm. In my collection.

Hospice des Sourds Muets.

2325. Obverse. Comite Electoral Du XI Arrondissement. | Hospices Des Sourds Muets.

Reverse. Barral President Mars 1848 Liesville, *Hist. num. de la rév. de* 1848, p. 525.

GERMANY. *Augsburg.*

2326. Obverse. The hospital.

Reverse. Inscription: in twelve lines. Beneath, arms of the city. 1856. Bronze. 25. 41 mm. Upon laying the corner-stone. Merzbacher, Sammlung, etc., 1883, No. 572.

Berlin.

2327. Obverse. Bust, to right. Upon shoulder: Westner. Inscription: Fridericus Borussorum Rex

Reverse. Building. Inscription: Militi Invicto Fatigato Quietem Exergue: Inhabitat & Inaugurat. | Berolin. M. Nov. | MDCCXXXXVIII Spiess, *Der Brandenburgischen hist. Münzbelustigungen*, 1769, ii., p. 1, fig.

Clarenthal (*Kr. Saarbrücken*).

2328. Kranken-Unterstutzung's Verein. Bronze. Farina Cat., May, 1893, No. 3793.

Elversberg (*Kr. Ottweiler*).

2329. D° D° Bronze. *Ibid.*, No. 3844.

Gersweiler.

2330. Bergmann's D° D°. Bronze. *Ibid.*

Hamburg.

2331. Obverse. Within oak branches tied by ribbon: Zum | Andenken | An D. 25 Jährige | Jubiläum Der | Blankeneser | Kranken- | Lade.

Reverse. Den Stiftern | Der Selben | Dankbar | Gewidmet | d. 13 Sep. 1871. Exergue, at right: C. D. C. Silver. 19. 30 mm. In my collection.

2332. Obverse. The arms of Hamburg, supported on high by two nude men with clubs. Between them a laurel

wreath tied by ribbon, within which two crossed swords upon three parallel twisters. Beneath : O. S. C. Bergmann Inscription : Die Reeper-Brüderschaft (the rope-makers' guild.)

Reverse. Zur (between scrolls) | Erinnerung | An Das (between scrolls) | 300 Jährige Jubilaeum | D. Kranken U. Sterbe-Casse | D. Reepschlägergesellen | Zu Hamburg (between scrolls) Den 4t. Januar | 1880 (between scrolls). Bronze. 26. 42 mm. In my collection.

Munich.

2333. Obverse. Bust of the Elector Max Joseph III.

Reverse. Noscomio (etc.), in twelve lines. 1775. Silver. By Scheza. Merzbacher, Sammlung, etc., 1883, No. 14. Upon building the Militair Lazareth.

Ratisbon (Regensburg).

2334. Privat—Kranken—Unterstützungs—Verein. (50th Anniversary 1892.) Bronze. 14. 22 mm. Weyl, One Hundred and Twenty-ninth Cat., 1893, No. 221.

Schweinheim.

2335. Krankenverein. 1872. Bronze. *Ibid.*

Worms.

Founding of New Hospital. 1772.

2336. Obverse. View of city and river Rhine. Inscription : Libera Wormatia. S·R·I·Fidelis Filia Exergue : between two griffins a shield, upon which a key and star.

Reverse. The hospital. Inscription : Neves Spital Waysen Vnd Armen Havs. Exergue : Fvnd·D·X·Dec | MDCCLXXII Tin. 28. 44 mm. In my collection.

Zündorff.

2337. Obverse. St. Sebastian. Inscription : St. Sebastianus Kranken-Verein In Zündorff

Reverse blank. Bronze, gilt. 19. 30 mm. Struck in 1870. In my collection.

AUSTRIA. *Buda-Pest.*

2338. Foundling hospital. Arms and inscription. 1869. Brass. 24. 38 mm. Cubasch Cat., 1893, No. 1688.

Klosterneuburg.

Lunatic Hospital.

2339. Obverse. Within beaded circle, 10 (Kreuzer.) Inscription : Irrenanstalt | * Klosterneuburg *

Reverse. 10 Brass. 13. 20 mm. Edges milled. In my collection.

2340. As preceding, save upon both obverse and reverse 1 (Kreuzer), instead of 10. Nickel. 11. 17 mm. Edges milled. In my collection.

Prague.

Hospital for the blind.

2341. Consecration of St. Raphael's Chapel at the Clar Institute for the blind. 1844. Silver, bronze. 28. 35 mm. Donebauer, *loc. cit.*, p. 568, Nos. 4867–68.

Paul Aloys Klar (1801–60), of Prague, founder of the above.

2342. Obverse. Head, facing. By Lerch.

Reverse. Allegorical, of his death. Bronze. 58 mm. Neumann, pl. XXIII., No. 185 ; Helbing Cat., 1893, No. 1695.

ITALY. *Bologna.*

Orthopedic Hospital.

2343. Obverse. Bust. Beneath : A Pieroni Fece. Inscription : A Francesco Rizzoli.

Reverse. The hospital. Grassi Inc. Bologna. Inscription : La Societa Medico-Chirurgica Di Bologna 12 Aprile 1880. Fondazione Dell' Istituto Ortopedico Rizzoli. San Michele In Bosco. Bronze. 34. 53 mm. In the Government collection. There is another medal of Dr. Rizzoli, struck in 1865.

Florence.

Foundling Hospital.

2344. Obverse. Bust, to right, with skull-cap. Beneath,

to left: MDCCXIII. Inscription: Lvd. A. Verrazano· Svbdec·Flor·Hospital·Innocen (triangular points.)

Reverse. To left, a female with wand and burning lamp; in front of her, a stork. To right, a kneeling mother with three infants; before her, a stalk of lilies; behind, a rock and waterfall. Above, a radiant human-faced sun. Legend: Firmat-Edvcat Bronze. 56. 87 mm. In my collection.

2345. Obverse. Bust, to right. Inscription: Joseph. M. (Guiseppe Maria) Martellini. Can. Fl. S. M. N. Hospital.

Reverse. Vigilance, beneath whose protection a mother and children. Legend: Concordi. Foedere. Exergue: MDCCXXIIII. Bronze. Du Rosey Cat., Leipsic, 1863, No. 2986.

Palermo, Sicily.

I am now able to describe and properly attribute No. 1554. The late Dr. Fisher had not given me its details, and had erroneously considered it as of a "Hospital for the crippled, in Spain." It is, instead, of an asylum for the poor in Sicily.

(1554.) Obverse. Two busts, to right, not jugate, and each with Order of the Golden Fleece. Beneath: Petrvs Balzar Romanvs Inscription: Carolvs. Hispan. Et. Ferdinandvs. Siciliae. Reges

Reverse. View of building, with cripples in front. Inscription: Vt · Ervat · A·Morte·Animas·Eor·Et·Alat·Eos·In·Fame Exergue: In. Novvm · Regia · Largitate | Diversorivm · Panormi | Exstrvctvm·Pavperes | Indvcti·Anno | MDCCLXXII Bronze. 33. 53 mm. In my collection.

Rome.

Hospital of Sts. Marinus and Gallicanus.

The previous description, No. 1624, was imperfect.

(1624.) Obverse. Bust. Inscription: Benedictvs XIII. P. M. A. IV.

Reverse. The Hospital. Legend: Cor Nostrvm Dilatatvm Est. Exergue: S. Marini Et S. Gallicani Nosocomivm. 1727. Bronze. Lochner, *loc. cit.*, V., vorrede; Venuti, No. 14; Poulharies, p. 289, No. 350. I owe the description to Professor Carlo Minati, of Pisa.

MORTALITY AND MORBILITY STATISTICS.

By Harry Kent Bell, M.D.

Alabama.—Jerome Cochrane, M.D., State Health Officer, Montgomery.

Mobile, 31,076: T. S. Scales, M.D., Health Officer, reports for the month of July a mortality of 61, of which 35 were colored, and 13 were under five years of age. The annual death-rate per 1000 was 23.52.

Zymotic diseases caused 13 deaths, and consumption, 12.

Arkansas.—D. W. Holman, Secretary, Little Rock.

California.—J. R. Laine, M.D., Secretary, Sacramento.

For the month of July the reports from 79 cities, towns, villages, and sanitary districts, aggregating a population of 777,020, show a mortality of 961—a death-rate of 14.76 per 1000 per annum.

There were 147 deaths from consumption, 45 from pneumonia, 26 from bronchitis, 9 from congestion of the lungs, 119 from diseases of the stomach and bowels, 6 from diphtheria and croup, 2 from scarlatina, 4 from whooping-cough, 28 from typhoid-fever, and 1 from *la grippe*.

Reports of prevailing diseases from 48 localities, outside of the larger towns and cities, give 14 cases of pneumonia, 75 of bronchitis, 18 of pleurisy, 3 of congestion of the lungs, 229 of diarrhœa, 82 of dysentery, 58 of cholera morbus, 54 of cholera infantum, 8 of diphtheria and croup, 13 of scarlatina, 43 of measles, 96 of whooping-cough, 23 of *la grippe*, 48 of typhoid-fever, 431 of malarial fevers, 5 of cerebro-spinal-fever, 12 of erysipelas, 81 of rheumatism, 61 of neuralgia, 51 of tonsilitis, and 40 of pharyngitis.

Connecticut.—Professor C. A. Lindsley, M.D., Secretary, New Haven.

The mortality report for July has been received from 165 towns in the State. There were 1397 deaths reported in the

State during the month in a population of 806,189. This was 396 more than in June, and 25 more than in July, 1893, and 40 more than the average number of deaths in July for the five years preceding the present. The death-rate was 22.0 for the large towns; for the small towns 17.3 and 20.7 for the whole State. The deaths from zymotic diseases were 544, being 38.9 per cent of the total mortality. There were 118 deaths from consumption.

DELAWARE.—E. B. Frazer, Secretary, Wilmington.

DISTRICT OF COLUMBIA, 250,000: W. C. Woodward, M.D., Health Officer.

Mortality report for the four weeks ending August 25th, 410, of which number 192 were of colored people, and 154 were under five years of age. The annual death-rate was 18.6 per 1000. There were 128 deaths from zymotic diseases, and 41 from consumption.

FLORIDA.—Joseph Y. Porter, M.D., Secretary, Jacksonville.

The summary, as published in *Florida Health Notes* for the month of June, is as follows:

Number of counties reporting, 45; number of cities reporting, 3; total population of said counties and cities, 391,422; number of births reported, 475; number of marriages reported, 410; number of deaths reported, 327; birth-rate per 1000 per annum, 13.85; death-rate per 1000 per annum, 10.02; average age of decedents, 29.51; number of deaths under five years of age, 107. Deaths from zymotic diseases numbered 60, and from consumption, 34.

ILLINOIS.—J. W. Scott, Secretary, Springfield.

Chicago, 1,600,000: A. R. Reynolds, M.D., Commissioner. The mortality for the month of July amounted to 2780, of which 1744 were of children under five years of age.

The annual death-rate was 20.85 per 1000.

From zymotic diseases there were 1364 deaths, of which 1041 were due to diarrhœal diseases of infants. Consumption caused 178 deaths.

INDIANA.—C. N. Metcalf, M.D., Secretary, Indianapolis.

IOWA.—J. F. Kennedy, M.D., Secretary, Des Moines.

The *Monthly Bulletin* reports for the month of July:

Boone, 10,000: Mortality, 10. Annual death-rate per 1000, 12.0.

Clinton, 22,000: Mortality, 14. Annual death-rate per 1000, 7.2.

Creston, 10,000: Mortality, 6. Annual death-rate per 1000, 7.2.

Council Bluffs, 35,000: Mortality, 33. Annual death-rate per 1000, 10.8.

Davenport, 35,000: Mortality, 51. Annual death-rate per 1000, 15.7.

Des Moines, 82,600: Mortality, 40. Annual death-rate per 1000, 5.64.

Dubuque, 40,000: Mortality, 40. Annual death-rate per 1000, 12.0.

Keokuk, 20,000: Mortality, 18. Annual death-rate per 1000, 10.8.

Ottumwa, 17,000: Mortality, 17. Annual death-rate per 1000, 12.0.

KANSAS.—M. O'Brien, M.D., Secretary, Topeka.

KENTUCKY.—J. N. McCormack, M.D., Secretary, Bowling Green.

LOUISIANA.—W. R. Harnan, M.D., Secretary, New Orleans.

New Orleans, 254,000—184,500 white, 69,500 colored. There were reported for three weeks ending August 11th, 418 deaths, of which number 173 were among the colored people, and 126 of children under five years of age. There were 62 deaths due to zymotic diseases, and 49 to consumption. The annual death-rate was 21.46 per 1000.

MAINE.—A. G. Young, M.D., Secretary, Augusta.

The Registration Report for 1892 gives a total number of 14,028 births in that year, which is equivalent to a birth-rate of 21.21 for each 1000 of population.

The percentage of American parents was greater than in any other New England State save Vermont. For the State the percentage of native-born parents was 61.94; for Lincoln, Waldo, and Hancock counties it was 89.30, 89.10, and 87.97 respectively; while in Androscoggin the percentage of native parents was only 39.15.

There were 12,147 deaths registered, making a death-rate of 18.37.

The largest number of deaths by far in any one month was 1577 in January; and 790 deaths, the smallest number in any month, occurred in November. In the first three months of the year, when influenza was prevalent, there were more than 1000 more deaths than in the second quarter, and in each succeeding quarter there was a diminishing mortality.

The deaths by age groups show a very large number at advanced ages: 3801 persons died at the age of from seventy to one hundred years or upward. One death in every three (3.1) was of a person who had reached the age of seventy or more; 14 per cent were of infants under one year of age.

The zymotic death-rate (from small-pox, measles, scarlet-fever, typhoid-fever, whooping-cough, diphtheria and croup, and the diarrhœal diseases) was not unfavorable. Per 10,000 it was 19.34.

Whooping-cough, with 54 deaths ascribed to it, caused more deaths than scarlet-fever did, with 36 deaths against it. Measles was the cause of 29 deaths.

Excepting Vermont, Maine's death-rate from influenza (*la grippe*) was greater than that of any other New England State.

During the year there were 212 deaths from diphtheria, and from typhoid-fever 286.

Tuberculosis caused 1513 deaths, of which number 1352 are ascribed to pulmonary tuberculosis, or consumption. Pneumonia caused 1431, and bronchitis 287.

MARYLAND.—James A. Steuart, M.D., Secretary, Baltimore.

Baltimore, 455,427: James F. McShane, M.D., Commissioner, reports for July that the total deaths were 1054—a decrease of 30, compared with the corresponding month of July, 1893. Of these 822 were whites and 232 colored—a death-

rate of 25.68 per 1000 for the former and 39.21 per 1000 for the latter. The death-rate per 1000 for the whole population was 27.80. Fifty-two died from infectious diseases, 86 from consumption, 30 from pneumonia, 14 from bronchitis, 168 from cholera-infantum, 10 from cholera morbus, 38 from diarrhœa, 10 from dysentery, 34 from enterocolitis, 15 from enteritis, and 31 from gastro-enteritis. Five hundred and thirty-four, or 50.66 per cent of the total deaths, were in children under five years of age. During the month 126 cases of infectious diseases were reported, a decrease of 65 compared with the preceding month.

MASSACHUSETTS.—S. W. Abbott, M.D., Secretary, Boston.

MICHIGAN.—Henry B. Baker, M.D., Secretary, Lansing.

Reports for the month of August, 1894, compared with the preceding month, dysentery, cholera-infantum, diphtheria, typhoid-fever, inflammation of bowels, cholera morbus, diarrhœa, and remittent-fever increased, and measles and pleuritis decreased in area of prevalence.

Compared with the average for corresponding months in the eight years 1886-93, small-pox, scarlet-fever, cerebro-spinal meningitis, and typhoid-fever were more prevalent, and membranous croup, typho-malarial-fever, erysipelas, intermittent-fever, measles, pleuritis, cholera morbus, and puerperal-fever were less prevalent in August, 1894.

Including reports by regular observers and others, consumption was reported present in Michigan in the month of August, 1894, at two hundred and thirty-four places; typhoid-fever at eighty-two places; scarlet-fever at seventy-three places; diphtheria at fifty-one places; measles at seventeen places, and small-pox at three places.

Reports from all sources show typhoid-fever reported at forty-four places more; measles at twenty-six places less; diphtheria at eighteen places more; scarlet-fever at nine places more; small-pox at ten places less, and consumption at five places more in the month of August, 1894, than in the preceding month.

MINNESOTA.—C. N. Hewitt, M.D., Secretary, Red Wing. *St. Paul*, 155,000: H. F. Hoyt, Commissioner. The mor-

tality for July was 216, of which 150 were of children under five years of age. The annual death-rate was 15.60 per 1000. Zymotic diseases caused 71 deaths, and consumption, 8.

MISSISSIPPI.—Wirt Johnson, M.D., Secretary, Jackson.

MISSOURI.—R. C. Atkinson, M.D., Secretary, St. Louis.

NEBRASKA.—F. D. Haldeman, M.D., Secretary, Ord.

Omaha, 140,452 : During the month of July there were 144 deaths, of which 84 were under one year of age. Annual death-rate per 1000, 12.3. There were 50 deaths from zymotic diseases, and 12 from consumption.

NEW HAMPSHIRE.—Irving A. Watson, M.D., Secretary, Concord.

NEW JERSEY.—W. D. Mitchell, M.D., Secretary, Newark.

Paterson, 95,262 : J. L. Leal, M.D., Health Officer. The mortality for July is reported to have been 1263, of which 163 were under five years of age. The annual death-rate was 33.5 per 1000. From zymotic diseases there were 121 deaths, and from consumption, 21.

Elizabeth.—The Board of Health has officially declared typhoid epidemic in that city. There have been 60 cases thus far reported (to September 15th), and of these 6 have resulted fatally.

The Board adopted a resolution ordering all wells closed, and recommended that all water be boiled before use. The Health Inspector was given full power to close all wells when, in his opinion, it was best for the public health.

NEW YORK.—J. S. Barnes, M.D., Secretary, Albany.

There were 12,500 deaths reported during July—2700 more than in June, and 2500 more than the average for the preceding six months. The mortality is nearly the same as that of July, 1893, and, proportionately, for the past ten years, this being always the month of largest mortality in this State, on account of the deaths from diarrhœal diseases. There were 3250 deaths from diarrhœal diseases, which is very near the

average number for this month for the past ten years ; it is an increase of 2500 over the mortality from the same cause in June ; 2400 of these deaths were reported from the maritime district and 600 from the Hudson Valley and Lake Ontario and Western districts, less than 100 occurring in the rural parts of the State. Fifty per cent of the total mortality was of children under five years of age, which is a little below the average for July, that of the preceding six months being 31.5 per cent. · Zymotic diseases caused 33.5 per cent of the total mortality, but excluding diarrhœal diseases, only 7.5 per cent. Diphtheria caused fewer deaths than in any preceding month of the year, but 100 more than in July, 1893, the increase over last year continuing to be limited to the maritime district, but moderate occurrence of disease existing elsewhere. There is an increasing mortality from whooping-cough. Typhoid-fever shows a moderate increase. Scarlet-fever was materially diminished. There were 19 deaths from small-pox, of which 1 occurred in Seneca Falls ; cases exist, outside of the maritime district, only at Newburgh and Port Jervis. Consumption shows the ordinary monthly mortality of about 1100 deaths. The weather during the month was dry, with deficiency of rainfall existing since May, very few cloudy days, 68 per cent of mean humidity, southwest winds of moderate velocity, and an average temperature for the month 2° above the normal.

New York, 1,925,562 : Total deaths, 4539—2560 under five years. Death-rate, 27,66. Zymotic diseases per 1000 deaths from all causes, 345.50. Deaths from consumption, 395.

The work of the summer corps of physicians attached to the Health Department, just brought to a close for the present year, has been tabulated by Dr. Moreau Morris, in charge of that corps. The figures show the increasing value of the work done, and bear testimony to the efficiency of the members of the staff. Fifty physicians in nine weeks of service visited 35,658 households, comprising 319,155 individuals, and prescribed for patients to the number of 20,746, only 16 of whom died while under treatment.

Brooklyn, 1,012,200 : Total deaths, 2719—1635 under five years. Death-rate, 31.50. Zymotic diseases per 1000 deaths from all causes, 385.00. Deaths from consumption, 205.

Syracuse, 91,944: Total deaths, 180—91 under five years. Death-rate, 23.40. Zymotic diseases per 1000 deaths from all causes, 50.0. From consumption, 24.

Albany, 98,000: Total deaths, 226—98 under five years. Death-rate, 25.50. Zymotic diseases per 1000 deaths from all causes, 327.50. From consumption, 18.

Buffalo, 300,000: Total deaths, 575—331 under five years. Death-rate, 23.00. Zymotic diseases per 1000 deaths from all causes, 465.00. From consumption, 44.

Rochester, 150,000: Total deaths, 252—100 under five years. Death-rate, 20.16. Zymotic diseases per 1000 deaths from all causes, 305.50. From consumption, 29.

NORTH CAROLINA.—Richard H. Lewis, M.D., Secretary, Raleigh.

From the *Bulletin* of the State Board of Health we find that during July there were 187 deaths in 29 towns, aggregating 146,454 population; 112 were of colored people, and 75 were of children under five years of age.

The annual death-rates were 10.4 per 1000 for the white population, 22.4 for the colored population, and 15.3 for the total. There were 28 deaths from consumption, 8 from typhoid-fever, 2 from pneumonia, and 34 from diarrhœal diseases.

Asheville, 12,000: Total deaths, 10. Annual death-rate, 10.0 per 1000.

Charlotte, 14,000: Total deaths, 22. Annual death-rate, 18.6 per 1000.

Raleigh, 15,000: Total deaths, 24. Annual death-rate, 19.2 per 1000.

Wilmington, 22,000: Total deaths, 41. Annual death-rate, 22.4 per 1000.

NORTH DAKOTA.—F. H. DeVaux, M.D., Superintendent, Valley City.

OHIO.—C. O. Probst, M.D., Secretary, Columbus.

OKLAHOMA TERRITORY.—J. O. Overton, M.D., Secretary, Kingfisher.

PENNSYLVANIA.—Benjamin Lee, M.D., Secretary, Philadelphia.

Philadelphia, 1,139,457 : M. Veale, Health Officer, reports : In the four weeks ending August 25th there were 1740 deaths, of which number 778 were under five years of age. Annual death-rate, 20.6 per 1000. Deaths from consumption numbered 165, and from zymotic diseases 418, of which 208 were due to cholera infantum.

Pittsburg, 264,000 : J. Guy McCandless, M.D., Registrar, reports : During the four weeks ending August 25th there were 405 deaths, of which 212 were under five years of age. Annual death-rate, 19.28 per 1000. Zymotic diseases caused 112 deaths, and consumption, 34.

RHODE ISLAND.—Gardner T. Swarts, Secretary, Providence.

An examination of the death returns for the month of June shows that the whole number of deaths from the 37 towns in the State was 531, which was 44 less than the month previous, and with a monthly average for this year of 596.

There were 10 deaths by accidents, 5 of which were by drowning. By cancer of various localities, 21, or 3.52 per cent. By various forms of dementia, 15 ; from diseases of the heart, 33. or 5.53 per cent ; of the kidneys, 15, and of the brain, 10.

From bronchitis there were 11 deaths ; pneumonia, 18 ; and tuberculosis of the lungs, 45, or 7.55 per cent ; of the air passages, 74, or 12.41 per cent ; from infantile diseases, 71, or 11.91 per cent ; 34, or 5.70 per cent of which were from cholera infantum. This is 8 more than during the same month in 1893, and 32 more than the monthly average for 1894. From tuberculosis in all forms, including meningitis, general and pulmonary, there were 58. From diphtheria there were 14 deaths, from scarlet-fever 2 only, and from typhoid-fever, 9. The number of deaths recorded in all the different towns and cities, as shown by the returns which have been received, was 575 in a population of 345,506. The annual death-rate was 16.44 in every 1000 of the population.

SOUTH CAROLINA.—H. D. Frazer, M.D., Secretary, Charleston.

SOUTH DAKOTA.—C. B. Alford, M.D., President, Huron.

TENNESSEE.—J. Berrien Lindsley, M.D., Secretary, Nashville.

The principal diseases, named in the order of their greater prevalence, in the State for the month of July were typhoid-fever, malarial-fever, dysentery, consumption, whooping-cough, scarlet-fever, diarrhœa, lung diseases acute, diphtheria, measles, mumps, rheumatism, cholera infantum, and cholera morbus.

Chattanooga, 40,000 : Total deaths, 34—colored, 20. Annual death-rates per 1000, white, 6.22 ; colored, 18.46 : total, 10.20.

Knoxville, 40,385 : Total deaths, 62—colored, 28. Annual death-rates per 1000, white, 13.04 ; colored, 36.86 : total, 18.42.

Memphis, 57,951 : Total deaths, 127—colored, 72. Annual death-rates per 1000, white, 20.38 ; colored, 33.78 : total, 26.29.

Nashville, 87,754 : Total deaths, 135—colored, 72. Annual death-rates per 1000, white, 13.83 ; colored, 26.04 : total, 18.45.

WASHINGTON.—G. S. Armstrong, M.D., Secretary, Olympia.

WEST VIRGINIA.—N. D. Baker, Secretary, Martinsburg.

WISCONSIN.—U. O. B. Wingate, M.D., Milwaukee.

Milwaukee, 270,000 : W. Kempster, M.D., Commissioner, reports for July a mortality of 378, of which 228 were under five years of age. From zymotic diseases there were 195 deaths, and from consumption, 29. The annual death-rate per 1000 was 16.80.

PROVINCIAL BOARD OF HEALTH OF ONTARIO.—Peter H. Bryce, M.D., Secretary, Toronto.

PROVINCE OF QUEBEC.—Elzear Pelletier, M.D., Secretary, Montreal.

BUENOS AYRES, 580,371 : Albert B. Martinez, Director-General of Municipal Statistics.

During the month of June there were reported 1166 deaths, of which 489 were under five years of age. The annual death-rate per 1000 was 23.1. From epidemic diseases there were 60 deaths, and from consumption, 95.

MEDICAL EXCERPT.

By T. P. CORBALLY, A.M., M.D.

SALOPHEN IN RHEUMATIC AFFECTIONS.—During the three years which have elapsed since Dr. Guttman first called attention to the value of salophen in rheumatic affections (Berlin *Klin. Wochenschr.*, No. 52, 1891), his experience appears to have been confirmed by a large number of clinicians both in Europe and this country. Drs. Ciullini and Viti, who have recently experimented with the remedy at Professor Raimondi's Clinic, conclude (*Terapia Clinica*, April 4th, 1894): 1. That it is an active anti-rheumatic, better tolerated than salicylic acid and salicylate of sodium, and more innocuous than salol. 2. That it is especially indicated in the intestinal stages of acute articular rheumatism, and in mild or subacute cases. 3. That in obstinate or chronic cases it is advantageous to follow its administration with that of iodide of potassium. 4. That salophen acts as an antifermentative in the intestines, and destroys the reaction of indican in the urine. 5. That doses as high as 4.0 to 6.0 grammes *pro die* given for several days do not produce disturbances of any kind. In the treatment of neuralgias, especially those of rheumatic origin, salophen has proved an effective analgesic, and if desirable may be associated with phenacetine.

GYNÆCOLOGICAL MEMORANDA ON EUROPHEN.—Dr. Arthur Strauss (*Times and Register*, July 28th, 1894) speaks as follows of the gynæcological uses of europhen:

"Richtmann employed europhen with more or less success in diseases of the uterus. He calls attention to the fact that it has as marked analgesic effects as ichthyol, over which it has the advantage of being devoid of disagreeable odor and of not producing the burning pain in the urethra and the frequent painful desire to urinate which is so often observed under treatment with ichthyol. Europhen was employed in the form of ointments. The pains rapidly ceased, cicatrization of the erosions occurred, and at the end of five or eight weeks the discharges were completely arrested. Excellent results were also observed from the application of the powder

or cotton tampons impregnated with europhen in cases of erosions and ulcerations of the portio vaginalis, so frequently found in connection with gonorrhœa. Waugh employed europhen with admirable results in kraurosis vulvæ. On the ground of a considerable number of cases, he calls attention to the value of a six-per-cent europhen ointment, and regards the remedy as exceedingly useful."

THE LAW OF PSYCHOPHYSICS IN NERVOUS PATHOLOGY.—M. Mendelssohn suggests, by a communication to *Le Progrès Médicale*, August 18th, that sensation being an important symptom in nervous pathology, there is reason for applying to the study of nervous diseases the psychophysical methods, alone capable of measuring the exaltation of sensation and of determining the relation between the sensation and the excitant. From the researches of M. Mendelssohn the laws of Weber and of Fechner are applicable to the pathological modifications of sensorial sensibility and perceptibility within more restricted limits than in the same organs in the normal state. The differential perceptibility is much more impaired in the modifications of the sensibility of dynamic origin, as in hysteria, than in those which are produced by the process of destruction in the nerve centres.

It is particularly the study of differential perceptibility, in its relation to other properties of the organs of sense, and especially to the sense of sight, which have furnished some of the important facts for the differential diagnosis of certain diseases of the nervous system.

M. Mendelssohn gives to these facts the name of symptoms of relation, which, he thinks, deserve to be introduced into the study of nervous pathology.

THE CAUSES AND TREATMENT OF TETANUS.—M. Le Roy des Barres has recently presented to the Académie de Médecine four cases of tetanus (*Le Progrès Médicale*, August 18th), of which the following is a summary :

First Case.—A young man, twenty-eight years of age, was wounded in the cheek with a stone, on the floor of a stable. The room which he occupied adjoined the stable, and five years before the accident a set of harness which had been used on a horse that died of tetanus was stored in it. Four days

after the accident he was suddenly seized with a severe attack of tetanus, which proved fatal.

This case, in which the disease set in so suddenly after exposure to the virus, was attended with a symptom which is but seldom met with. It was a case of facial paralysis, which was as complete as the tetanic movements were violent in other parts of the body. The bacteriological examination of the ground on which he was injured revealed no positive evidence of any exciting cause for the attack.

2. A child seven years of age received a contused wound of the thumb in a stable. The wound was smeared with the earth on the floor of the stable. Tetanus followed on the twelfth day after the accident. The thumb was amputated, but, on the day after the removal of the injured part, trismus set in ; but relief came promptly. Anæsthesia with chloroform was well borne. The child was cured.

3. A woman, accustomed to such work, repaired the mattress on which the former patient slept during his illness. A month after the work was done she wounded the sole of her foot with a nail. She probably had retained some of the tetanic virus, communicated from the mattress in her system or in her clothes. The case was severe, and proved fatal.

4. A man twenty-eight years of age, who was dragged by a strap and severely wounded, was brought to the hospital wrapped in a covering used in the stable, which came in contact with the wounds on his body. An early attack of tetanus followed, which began on the ninth day. It could not be learned that the covering from the stable had ever been used for a sick horse or not. The tetanus was very severe, as is the case whenever the disease begins early after exposure to the virus. Chloral and the *serum antitoxique* were administered, perhaps too late in the disease to be of service, for they did not prevent death.

In three of these cases the tetanus was undoubtedly of animal origin. The first case gives evidence of the great length of time during which the virus is capable of retaining its activity. The only case that recovered is an additional proof of the utility of amputation, when it is possible, of course. The third case was one in which the disease was contracted from one human being to another.

In regard to prophylaxis, all these cases show the necessity of disinfection of all objects that come in any way in contact with the disease, whether they be articles of wearing apparel or covering, and even the ground that may have absorbed the virus from man or animals. M. le Roy des Barres advises that this disease should be put on the list of those which is necessary to be reported by veterinary surgeons to the Health Department. It is with tetanus, as with rabies, or hydrophobia, and malignant ulcers. It is to the diseased animal that the disinfection should be first applied, then to the surroundings, in order to prevent the disease from spreading to man or animal.

The *serum antitoxique* failed, possibly because employed too late. But, as a preventive measure, M. le Roy des Barres is inclined to use it in cases of contused wounds soiled with earth or other substances, as may happen to grooms, coachmen, etc.

HYDROGEN DIOXIDE H_2O_2.—L. D. Kastenbine, A.M., M.D., Professor of Chemistry, Urinology, and Medical Jurisprudence of the Louisville Medical College, in a contribution to the Louisville *Medical Monthly*, July, 1894, says that of the various brands of commercial dioxides he has examined, he finds Marchand's to be the one which yields the largest amount of available oxygen under all conditions of exposure, and the one which contains the minimum percentage of free acid. Marchand's, when perfectly fresh, is about a 15-volume solution. All the marketable articles he has seen are free from barium compounds, but the majority do not come up to the 15-volume standard, but are 6, 8, 10, and 12-volume solutions.

THE REVELATIONS OF A GLASS OF WATER.—This is the suggestive title which M. le Dr. Chiais (Menton) gives to a communication to the Congrès de l' Association Française pour l'Avancement des Sciences à Caen (*Le Progrès Médicale*, August 25th):

When nutrition is normal, a glass of water is rapidly absorbed and rapidly eliminated by the kidneys. When the man is sick, absorption is slow, the liquid remains a long time in the stomach, and the elimination is both excessively slow

and incomplete. The physical disturbance most frequently accompanies chemical derangement. The amount of solids eliminated with the urine is sometimes in excess, and sometimes much below the normal. If by hygienic, medicinal, or any special treatment, the practitioner succeeds in bringing back to the normal condition the circulation of the fluids, he restores nutrition to its physiological condition, and the disturbances of a chemical nature disappear. On what conditions does this transformation of nutrition depend? The organs must be in a condition to resume their physiological action. This cannot be effected if the nervous exhaustion be too great or if the anatomical alterations are too marked.

At the request of M. Chiais the two following propositions have been set down for study at the next Congress: How to determine and to fix the type of normal nutrition. How to differentiate normal nutrition from pathological nutrition or nutritions. The reader must determine the scope of the term *nutritions.*

BOVININE.—In conditions of extreme prostration with inability to retain ordinary food on the stomach, such as protracted sea-sickness, sick headache, and pregnancy, bovinine is the most valuable tonic nutritive with which we are acquainted; it gives tone to the stomach, and needful food. It contains all the nutritive qualities of beef in their most digestible form.

PLATT'S CHLORIDES, *sufficiently used*, is a perfectly safe and efficient household disinfectant. Moreover, it is highly recommended by many physicians for hospital use, and particularly in gynæcological practice.

ANTIKAMNIA, for convenience and accuracy of dosage, is now prescribed, to a great extent, in the tablet form. Patients should be instructed to crush the tablet before taking, thus assuring celerity.

The manufacturers have thrown around their product the security of specially protected packages for both powder and tablets. And each tablet bears a monogram indicating its composition. Physicians should therefore insist on the presence of these conditions.

EDITOR'S TABLE.

SANITARIAN, OCTOBER NUMBER, 1894.

☞ ALL correspondence and exchanges and all publications for review should be addressed to the Editor, DR. A. N. BELL, Brooklyn, N. Y.

THE COMMUNION CUP AGAIN—THAT EPIDEMIC AT SAN JOSÉ, AND ANOTHER OF THE SAME SORT.

BY the following letter and the catalogue to which it refers it appears that the "individual communion cups" are the invention of Charles Forbes, M.D., and not by the *Rev.* Charles Forbes :

ROCHESTER, N. Y., September 3, 1894.

A. N. BELL, M.D., *Editor of* THE SANITARIAN :

DEAR DOCTOR : I herewith take the liberty of sending a catalogue of the new communion outfits, the reading of which will enable you to make some corrections in the article entitled "The Communion Cup" in the August number of THE SANITARIAN, No. 297.

The quotations in the article are from remarks made by a young "reverend" gentleman in his church on the introduction of the new outfit. He is very enthusiastic in the matter. I regret that any wrong statement was made in regard to the epidemic of diphtheria. The only information I am able to obtain in regard to the matter is, that a number of persons living in a little town near San José, Cal., had diphtheria, and the disease was thought to be traceable back to the communion cup. I have reported an epidemic of diphtheria in the catalogue (page 14) "*Danger Real.*" At the same meeting Dr. George Fox, a friend of mine, and a specialist in skin diseases, reported five persons in one family contracting syphilis by kissing a relative who had come to visit them. Dr. Fox is a physician of good standing in New York City. Suppose this diseased person had taken wine from the communion cup ; do you think later communicants partaking of the same cup would be perfectly safe? Would you take the cup or would you allow a son or daughter to take it?

Allow me to state that I have been familiar with the working of the microscope for the past twenty-five years. I own one of Bullock's finest instruments. My microscopic investigations have been confirmed by others. I do not think any mistake has been made.

I trust you will receive this kindly, as I know you would like to have the facts.

Very sincerely,

CHARLES FORBES.

The epidemic reported in the catalogue above referred to rests upon the same ingenious effort to discover a reason for the "individual communion cup" enterprise as the imaginary ones at San José and the nameless little town near by. We here quote the whole paragraph, but have italicized the words, to which the reader's attention is particularly requested :

The danger real, not imaginary. "Christian people have taken the communion for eighteen hundred years ; *who ever heard of any one contracting disease thereby?*" Now that special attention has been called to the possible danger, cases are not wanting to prove the reality. A recent epidemic of diphtheria occurring in twenty-four families in the city of Rochester, N. Y., and reported officially by the health officer appointed *to determine its origin*, was traced back to a single *drinking cup which all of the sick had used.* Microscopic examination revealed the diphtheritic microbes adhering in great quantities to its rim. Other cases have been reported.

Really, on reading such a report under the light of advanced knowledge on the treatment of the sick in a civilized community where a board of health obtains, one hardly knows at which to be most astonished—the marvellous use of a single drinking cup for all of the sick in an epidemic of diphtheria diffused through twenty-four families, or the implied identity of *that* cup with the communion cup ! Of like dissimilarity is contact with the communion cup to kissing and its danger, recognized by all sensible people.

We would be the last to belittle any proper effort to prevent the propagation of disease. But the effort in question, based as it is on mere imaginary danger, exalted for the promotion of a pecuniary enterprise—the "Sanitary Communion Outfit Company"—is so disturbing to the due observance of one of the holiest rites of Christian fellowship ; and, more-

over, considering that "Christian people have taken the communion for eighteen hundred years" without ever having heard of any one contracting disease thereby, and the inability of the votaries of the "Outfit Company" or other persons to cite an exception—considering all these conditions—the enterprise appears to us to be without justification; there is no evidence to sustain it.

Indeed, to accept such inventions (of epidemics) as any reason for abandoning the communion cup would apply with at least equal force to the necessity of sterilizing the consecrated wafer or bread; for every accomplished microscopist, as Dr. Forbes, well knows that broken bread speedily becomes infested with living germs (but not poisonous)—germs, we venture to say, of the same kind as those which swarmed around the rim of that wonderful family cup which passed through twenty-four families; for, considering the diligence and manipulation required to discover the diphtheria germs in an ever-so-carefully-collected portion of a diphtheritic membrane, we confess incredulity with regard to the facility with which the *germs of diphtheria* are said to have been discovered on the rim of that cup, though we have no doubt whatever that the surface of any drinking cup subjected to such a tour of service and handling would be an interesting field to the microscopist.

CONSTANTINE'S PINE TAR SOAP.—ST. PETER'S HOSPITAL OF THE SISTERS OF THE POOR OF ST. FRANCIS, BROOKLYN.

BROOKLYN, N. Y., September 15, 1894.

To the Editor of THE SANITARIAN:

DEAR DOCTOR: The sample of Constantine's pine tar soap which you desired of me to have tested has been used by the staff of St. Peter's Hospital, both medical and surgical, and proved entirely satisfactory both as a detergent and disinfectant. The Sisters have spoken of its value without reserve, and have further assured me that in many of the eruptive diseases of children during the hot weather it is invaluable.

Yours very truly,

T. P. CORBALLY, M.D.,
Attending Physician.

THE DISINFECTING PLANT AT RIKER'S ISLAND consists essentially of (1) two dynamos; (2) four vats each capable of holding one thousand gallons of sea water; and (3) steam pumps for filling the vats and disposing of their effluent. In each of the vats a set of four electrodes of platinum and zinc are immersed, the current from each dynamo passing through two sets of electrodes. When in operation, chemical action in the sea water is manifested by the liberation of bubbles of gas about the electrodes. The water acquires a distinct chlorine odor. What actually occurs is the transposition of the chlorides of the sea water into hypochlorites, and, it is claimed, the production of a certain amount of ozone. The germicidal properties of the hypochlorites have long been well known. The process of producing them on a large scale from sea water appears to be the discovery of Mr. A. E. Woolf, who claims that the Hermite process now under investigation in Europe is an imperfect copy of his methods.

There is no room for doubt that the electrolyted sea water is a powerful deodorizer. At the rate of almost one hundred thousand gallons a day, it has been sprayed upon the offensive ground at Riker's Island for some weeks past, and the entire surface of the putrefying mass has been rendered inodorous. This, of course, is but a temporary expedient. What will finally be done in the matter remains to be seen.

THE CREMATION OF GARBAGE.—The *Inventive Age* notes that there are now fifty-five towns and cities in England which destroy their garbage and solid refuse by burning, using an average of about ten furnaces each for that purpose. The combustion of the material is used for the generation of steam, by which the streets are electrically illuminated, and other cities are reported to be considering the propriety of reducing their municipal expenses by this means. The Livet, the latest introduced method, is stated to burn on an average 331 pounds of rubbish per hour for each square foot of grate surface, with an evaporation of 4.08 pounds of water for each pound of rubbish consumed. In this way science is showing what profit there is in what has been regarded as waste and filth, to be used in contaminating public drinking water or getting rid of it in some other way.

THE BRITISH INSTITUTE OF PREVENTIVE MEDICINE is in a fair way of success. The site has been purchased and some important sums have been secured—*e.g.*, £10,000 from the Grocers' Company—one of the most liberal of the city companies; £20,000 from the Berridge trustees, and a further £25,000 is about to be handed over from the same source. The College of State Medicine will also hand over its plant and money to the Institute, in value above £4000. Some of the investigations I have mentioned in previous letters were carried out for the Institute, and now that a suitable building is about to be erected the silly opposition of the antis to this undertaking may be diverted into other channels.

THE PLAGUE BACILLUS.—Several investigators in China, who have been studying the plague, have announced the discovery of a bacillus, the micro-organism in each case being different from all the others. Although time alone will decide which of these claims, if any, is well founded, the presumption is that Kitasato's bacillus is the true one. The disease still prevails in Canton, but has nearly died out in Hong Kong. An official report places the number of deaths from the plague in the latter city up to August 1st at 2504.

A CHRISTIAN SCIENTIST in Nebraska was recently tried before the District Court of Gage County, Neb., on the charge of practising medicine contrary to the statutes of that State. He was acquitted by the jury, but the prosecuting attorney carried his exceptions to the Supreme Court, where they were sustained. Judge Ryan handed down a decision in which he said that the fact to establish a State Board of Health, to regulate the practice of medicine in Nebraska, is as much directed against any unauthorized person who shall profess to treat any physical or mental ailment of another, as against one who practises medicine as the term is generally understood.

The section of the act upon which this decision was based reads as follows: "Any person shall be regarded as practising medicine, within the meaning of this act, who shall operate on, profess to heal, or prescribe for, or otherwise treat any physical or mental ailment of another. But nothing in this

act shall be construed to prohibit gratuitous services in case of an emergency, and this act shall not apply to commissioned surgeons in the United States Army and Navy, nor to nurses in their legitimate occupations, nor to the administration of ordinary household remedies."

This law is certainly rigid, but not too much so, and any suffering that might arise from a too strict application of it is prevented by the emergency clause. It would be impossible for a layman to be punished for saving life in the absence of a physician, as has actually occurred in France.

NEW BOOKS AND BOOK REVIEWS.

ANY BOOK reviewed or advertised in THE SANITARIAN costing $1.50 or less will be sent *free* to any present subscriber sending the name of a new subscriber, or to any new subscriber on receipt of the full subscription price sent on his own account; or any book so reviewed or advertised costing more than $1.50 will be sent at a discount of that amount.

INDEX-CATALOGUE OF THE LIBRARY OF THE SURGEON-GENERAL'S OFFICE, U. S. ARMY. AUTHORS AND SUBJECTS. Vol. XV. *Universitad-Vzoroff.* Quarto, 842 pp. Washington, D. C., Government Print.

Briefly summed up prefatorily by Surgeon JOHN S. BILLINGS, under whose supervision this monumental work continues, the volume includes 6152 author's titles, representing 3312 volumes and 4235 pamphlets. It also includes 8576 subject-titles of separate books and pamphlets and 35,697 of articles in periodicals. The fulness of the Library and its great utility as a literary resort for physicians is well indicated by the number of pages required for the catalogue of publications on some of the leading subjects of this volume—*e.g.*, as follows:

Urethra and Urethrotomy, 67 pages; Urine, 48 pages; Uterus, 346 pages; Vaccination and Vaccine, 78 pages; Ventilation, 14 pages.

MEDICAL MICROSCOPY. A Hand-Book for Students and General Practitioners, including Chapters on Bacteriology, Neoplasms, and Urinary Examinations. With a Glossary

and Numerous Illustrations (partly in colors). By JAMES E. REEVES, M.D., Member of the Association of American Physicians; ex-President of the American Public Health Association; ex-Member of the State Board of Health of West Virginia, and Secretary of the Board; ex-President of the State Medical Society of West Virginia, etc. Price, $2.50. Philadelphia: P. Blakiston, Son & Co.

This is a particularly timely manual, containing the gist of the most important subject that can engage the attention of the medical practitioner or student, adapted to the present advanced needs of the bacteriological laboratory from a thoroughly practical view-point. The author is well known as an experienced microscopist. The importance of the microscope in medicine, how to use it, how to prepare the material for examination, how to interpret and how to fix the objects discovered are the needful lessons lucidly taught by one who has acquired his knowledge by practical observation. Moreover, in the special chapters on Bacteriology, Neoplasms, Urinary Examinations, the Blood, the Sputum, and Fecal Discharges is summed up all the recently ascertained results of special investigations of these several subjects, opening the way for their further pursuit under the light of the best methods to date.

A TREATISE ON DIPHTHERIA. By DR. H. BOURGES. Translated by E. P. HURD, M.D., Member of Massachusetts Medical Society; Medical Examiner for the Third Essex District, Massachusetts; Member of Climatological Society; Physician to the Newburyport Hospital; Professor of Pathology in the College of Physicians and Surgeons, Boston, Mass. 12mo, pp. 195, price, 25 cents. George S. Davis, Detroit, Mich.

A volume of the Physicians' Leisure Library Series, comprehending a succinct history, symptoms, etiology and bacteriology, pathology and treatment of diphtheria, and the hygiene of convalescence. It is scarcely necessary to say that the subject is one of the greatest importance, and, in view of the universal prevalence of the disease and of the recent advances made in its treatment—one which no physician can afford to neglect. The volume is particularly commendable for the

terseness with which it covers the whole field of one of the most important diseases with which physicians have to contend.

TRANSACTIONS OF THE MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND, 1894, WILLIAM B. CANFIELD, M.D., Secretary, Baltimore, Md.

A pamphlet of one hundred pages, containing, besides the minutes of the Transactions, reports of committees, etc, two particularly important addresses : " The Extinction of Tuberculosis," by George H. Rohé, M.D., President, and " Predisposition to Tuberculosis," by James T. Whittaker, M.D.

Dr. Rohé very clearly sums up the history of the tubercle bacillus, the conditions under which it is developed, and the relative receptivity of individuals to its invasions ; considers the liability of infants to the infection by way of the digestive organs when nursed by consumptive mothers, or fed on milk from tuberculous cows ; accepts the belief as well founded that the bacillus cannot effect a lodgement in the tissues and begin its destructive action unless these are weakened in their resistive power by an inherited defective organization or by acquired conditions of lowered vitality.

Dr. Whittaker very clearly shows that hereditary tuberculosis is exceptional ; that the disease is acquired by inhalation of the tubercle bacillus. Everybody is liable to it. There is no immunity save the power of resistance by individualism. " We know of no predisposition peculiar to phthisis. Predisposition to phthisis is proximity to the sputum of phthisis."

ONE HUNDRED YEARS OF BUSINESS LIFE, 1794–1894, is the record of W. H. Schieffelin & Co., New York. Six changes in the composition and name of the firm have occurred, but there has always been a Schieffelin. The beginning, 1794–99, was Lawrence & Schieffelin ; next followed Jacob Schieffelin, 1799–1805 ; and ever since a Schieffelin has been the senior. The record, a pamphlet of 56 pages, adorned with the portraits of the lineage, is an exceedingly interesting one, well calculated to stimulate laudable ambition and encourage enterprise in all who are privileged to read it. It is worthy of the widest dissemination.

THE SANITARIAN.

NOVEMBER, 1894.

NUMBER 300.

DISEASE PREVENTION AND ITS HINDRANCES.

ANNIVERSARY ADDRESS AT THE TWENTY-SECOND ANNUAL MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION, AT MONTREAL, CAN., SEPTEMBER 25TH, 1894.

By E. P. LACHAPELLE, M.D., of Montreal, President.

IT is not without a legitimate feeling of uneasiness that I rise on this important occasion, to address you in a tongue that is somewhat strange to me. I avow that the dictates of duty would scarcely be powerful enough to develop sufficient courage, were I not assured, previously, of your benevolence and lenity. Encouraged by this reliance on your indulgence, I shall proceed, and, by being as short as possible, I hope to merit your good-will.

The American Public Health Association, since its foundation, now twenty-two years ago, ever true to its mission, has never ceased to labor for the advancement of sanitary science —for the promotion of measures and organizations that should effect the practical accomplishment of the laws and principles of public hygiene. It has thus realized the brightest hopes and most enthusiastic previsions of its worthy founders, and has extended its benefits and influence over the whole of North America; to-day it embraces the three great countries that form this vast continent: the United States of America, the Republic of Mexico, and the Dominion of Canada, all three working together in brotherly emulation, recognizing no political boundaries, and valiantly striving to attain one unique and humane object: the dissemination to all of the knowledge of public hygiene and the development of respect for its decrees.

It is, therefore, fellow members of the Association, with the greatest pleasure—after having taken part in our former meetings in the principal cities of the United States and Mexico, reaped precious knowledge, and borne away happy remembrances—that I see us all, to-day, congregated in this city, the commercial metropolis of our Canada. I know we shall be pleased to again find ourselves united, not only to strengthen the bonds of friendship formed in preceding meetings, but also to communicate to one another the fruits of recently acquired experience and knowledge, each contributing his mite to help the progress of hygiene among our people, and so continue the good work of our Association.

Every year the Association changes its places of meeting, and this for good reasons. The spirit of its founders being to establish, above all, a body for the diffusion and popularization of public sanitary science, this object could not be better attained than by extending to its greatest limits the influence of the Association; and for this purpose no surer means could be found than this bringing together of its distinguished members in different, distant cities. There they are allowed to see and judge for themselves of the wants and progress of the different parts of the Continent; their experience is enriched, they compare observations, and suggest new ideas. Again, by adopting this method of meeting, the same members are not continually called upon to displace themselves, which would often entail considerable sacrifices.

On the one hand, not only do the members themselves derive considerable profit from such changes, but, on the other hand, and, above all, those congresses in various parts of the Continent immensely facilitate the propagation of our science to the public by awakening, as they do, general interest wherever they are held; they help to dissipate erroneous ideas and prejudice by giving publicity to the unbiased opinions of a large number of enlightened and disinterested men on local questions; they are of great assistance to governments by having those important questions solved according to the requirements of each country; they give the authorities strength, confidence, and courage to put into practice much-needed measures; they even force them to act. Schools, universities, local boards of health, municipal authorities, and

others feel the stimulus imparted, and labor on with fresh and invigorating impetus.

Judging, as I do, from what has occurred elsewhere, I feel convinced that Montreal, and this province in general, will reap much benefit from this learned and important congress. Wherever the Association has met, it has stimulated and guided the mareh of progress, and it is becoming more and more respected and honored by the grateful public, for it ever leaves behind it tangible and irrevocable proofs of the good work it propagates.

Hygiene is no longer the patrimony of physicians exclusively—it is a science open to all: laymen and clergymen, men and women. It needs supporters and workers in all classes: engineers, architects, teachers, chemists, etc. In a word, it appeals to all who are competent to aid its progress.

This universality of sanitary science has been productive of the most brilliant results; to it we owe the greatest part of recent progress. What would hygiene be to-day bereft of the admirable discoveries of a layman, the illustrious Pasteur? —that light of modern science, who has created such a revolution in our knowledge of the true causes of contagious diseases, and their modes of spreading; who has been the forerunner and inciter of all our modern effective methods of prevention and treatment of those scourges, and is the real father of actual antiseptic medicine.

All cannot be Pasteurs, but all can work. Every one should contribute a mite of help or knowledge, thus securing universal interest and co-operation. There should be perfect solidarity as to individuals and nations with regard to public hygiene.

Contagious diseases and epidemics respect no political frontiers; it therefore requires union and a common interest to effectually put a check to their invasion and extension.

The recognition of this fact, relating more directly to adjoining countries, has caused our Association, originally founded in the United States, to gradually extend and naturally embrace the three contiguous countries which form North America, and whose sanitary interests are identical. It is for this reason, again, that it holds its annual meetings in divers sections of the Continent, appealing to and bringing together

in one harmonious family all the sanitarians of North America, to submit to their careful study health problems which interest them all.

Herein lies the explanation of the immense progress accomplished on this Continent during the last twenty years.

Judicious and scientific quarantine has been established in all quarters ; State, provincial, and local boards of health have become generalized, and have adopted wise and important sanitary measures and regulations.

Public opinion has been converted, popular prejudice giving way to unwavering confidence. Governments have thus been enabled, without risking their often precarious existence, to cause important decrees of hygiene to be sanctioned by parliaments, and to have the necessary funds voted to permit of their being put into practice. Hygiene having thus drawn their attention, they begin to understand the necessity of strenuous means being employed to assure its advancement, and they realize the fact, that instead of being detrimental to public commercial interests, sanitary measures favor their growth by protecting the country from disease. They recognize, to-day, that the money and labor spent in upholding sanitary principles are repaid manifold by the security afforded to public health, a more continuous and active trade being thus assured.

May we not hope that governments, fully realizing the importance of those questions and wishing to afford greater facilities for protection, will soon see the necessity of creating a new department in their cabinets—that of public health ; and that, in the near future, all governments will be advised and supported by a competent specialist—a minister of public health ? We can easily foresee all the good that will arise from the creation of such a position.

Although it is encouraging and pleasing to note the progress realized, the success obtained, we must not believe the task is done, and that all obstacles have vanished. For instance, the adoption of measures requisite to put into practice the solution of a question of sanitation collides with two great and serious obstacles—expenditure and personal interests. Such is the case when measures for quarantine, isolation, disinfection, the cleansing of towns and seaports, the prohibition of adulterated food, etc., are put into force.

Quarantine, so needful to protect against the invasion of exotic epidemic diseases, is no longer, thanks to the progress of hygiene, what it was formerly ; detention is shorter, I may say, practically suppressed by our modern methods of effective disinfection ; but, nevertheless, even the slightest delay in the unloading of a ship begets expense, and brings constraint on personal interests.

I might say the same of the other measures mentioned ; each calls for expediture of money, time, and labor, and is sure to affect the interests of some one.

In this way opposition is brought to bear on the introduction of would-be effectual means of protection by persons who are really wronged, or believe themselves so. On the other hand, those for whom protection is sought are mostly indifferent to the labor and worry that is expended for their safety.

It is not surprising, then, that governments and parliaments should often hesitate, and frequently withdraw their support. On one side, they have small reason and light pressure to act ; on the other, great influence is thrust forward to make them desist.

What is here needed to insure success is the voice of authoritative knowledge and teaching ; and congresses of sanitary science, such as this one, composed as they are of eminent and influential men, can alone furnish cogent authority.

To the pretensions of interested individuals who often, in an exaggerated manner, plead expense and trespass on their private affairs, and to the hesitating, faltering governments that listen to those reclamations and are made to doubt the utility, efficacy, even urgency of the requested measures, we can oppose the authority of decisions rendered on those questions by the most authorized and disinterested sanitarians of various countries ; such decisions having been formed in open convention, after serious study and discussion, possess a value and respect which cannot easily be ignored or set aside. We have the hope, therefore, of seeing governments ignore the opposition of the one class and the apathy of the other to accede to our humane demands.

Such have been the cares and tendencies of our Association since its foundation, and we may state with pride that the results obtained so far, in all directions, are an encouragement

to labor on earnestly and vigorously for the achievement of the task that is left to be accomplished. May the success of the future even exceed that of the past.

To fulfil the spirit of our annual meetings, we must then choose questions that require the most immediate decision, study them fully, discuss them attentively, and try to effect a solution of them based on the experience of other countries and on the most recent decrees of modern science. We must bear in mind that ours is a science of application, whose problems may differ according to localities and circumstances, and that it thus belongs to each State and province to choose questions and accept solutions most in accordance with local customs, climate, and legislation.

We shall thus have to consider particularly exotic epidemic diseases and communicable affections of local origin in order to discover the most efficient means of protection against invasions by the one, and against the development and spread of the other.

The protection against exotic contagious diseases is based on two theories, each having its stanch supporters.

According to the one, epidemics are due to, or are maintained by the unhealthfulness of the soil. To insure its permanent salubrity is therefore the best means of preventing and suppressing epidemics. England has supported this doctrine, and spent over a thousand millions in cleansing and purifying its seaports.

According to the other, the real danger lies in the importation of disease germs; therefore protection is sought in the efforts to prevent their introduction along seaboards and frontiers, or, in other words, in the establishing of an effective quarantine service.

Those two doctrines may be equally true, but separately they are not complete. To secure real protection in accordance with the requirements of modern science, of commerce, and of the financial standing of a country, a just medium has to be adopted by a combination of the two doctrines. What has been possible and successful in England, owing to the small extent of coast and land, and to the isolated position of the country, cannot be so in all other localities; a long coast-line, a large surface of country, and near exposure to infection,

would render the sterilization of the soil an enterprise much too expensive and tedious. The immediate help of a strict and intelligent quarantine service is required.

Quarantine may yet be looked upon as horrible and too rigorous for certain commercial and personal interests, but, on the one hand, we all have interests to protect, and the most vital interests—our health and lives; and, again, the quarantine of to-day, with its modern perfection, has been reduced to a minimum and has become simply a station for inspection and disinfection. The name alone of horrifying remains of the past. So all should bow before the general appeal and the general interests of a country demanding protection; and, instead of obstructing progress, should work actively to help science to render the means at hand still more perfect and less stringent, and invent others more effective and of easier application.

To protect us against fire, accidents, and crime, the law demands of us certain requirements that do not always suit our views or funds; but for the general good we are obliged to yield. Should the law not be even more inflexible and powerful with regard to the dictates of the apostles of Hygeia, that benevolent daughter of Æsculapius and protecting goddess, whose sole care, like ours, was to watch over the health of mankind and prolong the existence of each of its beings?

By thus judiciously combining the two doctrines we may hope to secure almost absolute immunity, and, at the same time, reduce to a minimum the exactions of quarantine and other rigorous measures; commerce and hygiene may thus be brought to an harmonious understanding, and hereafter work in concert.

The calm with which we have witnessed for the last three years the menaces of cholera, the success with which it has been repulsed from this Continent up to now, and the effective protection against yellow-fever provided throughout the Mississippi Valley during these last ten years by the model quarantine of New Orleans, prove not only the progress accomplished and the efficacy of the actual system of quarantine, but also the confidence and co-operation of the intelligent public. This is a great step toward success. Let the good results of our labors be repeated and publicly brought

out, and our humane instructions and exactions will soon appear less barbarous.

There is still room for progress, both to oppose the introduction of germs and to purify and sterilize the soil, so diminishing danger, and at the same time commercial restraint. Among other things, navigation requires looking into. Is everything done by our great steamship companies usually so interested to facilitate our arduous task? Is the sanitary protection afforded sufficient? Have they on board all their vessels every suggested and available means of stamping out a budding disease and thoroughly destroying its effects? Have they methods of isolation and disinfection sufficing to protect healthy passengers and save from infection the ports they enter? Are they sufficiently under the control of health regulations? Those are questions that deserve our attentive study.

Communicable diseases that arise on our soil, particularly variola, typhoid-fever, and tuberculosis, have already often been the objects of our labors, and the results obtained, both as regards study and practice, have proved that they may be classed among preventable diseases.

Variola, so frequent and disastrous among us, has been vanquished and is now kept in abeyance. The number of its victims, so numerous but a few years ago, has considerably decreased ; and, in a short time, we hope it will be an exception to hear of any.

This death-dealing, beauty-destroying scourge will have succumbed to three inflexible agents—vaccination, isolation, and disinfection. We shall have won in the energetic fight against this fell disease the gratitude and co-operation, not only of the general public, but more especially of the ladies, and this latter consideration means success to other measures of public health.

The experience of the last fifteen years has proved that the mortality from small-pox is inversely in proportion to the success of vaccination. In countries where vaccination and revaccination are obligatory (Germany, etc.), it ranges from 1 to 2 in 100,000, while in those in which the preservative is less enforced it reaches from 32 to 150. Such statistics are the best argument in favor of obligatory vaccination and revac-

cination. To convince every one of the necessity for such measures, we most remove: First, all apprehension or reality of danger; second, prove by stern facts and figures the good results obtained. The first consideration brings us to the importance of adopting, after careful study and experiments, the best means of obtaining pure lymph and insuring aseptic vaccination. With those agents no doubt need be entertained as to the danger or efficacy of vaccination. The second point requires the compiling of statistics, and especially the widespread publication of the good results. In a short time, by such proofs of utility, the public, and especially governments, will be thoroughly convinced of the urgency of obligatory vaccination and revaccination.

Typhoid-fever and tuberculosis are even more malignant in their ultimate results than variola or great epidemics of other dreaded plagues, because their action is persistent, insidious, and universal. The attention of the public and others is not thus thoroughly awakened to the threatening danger, and no efficient opposition is brought to bear against the ravages of those two devastating diseases. No expense or study should be considered to discover means of fully arresting the action of those scourges; the demand is urgent; the answer vital.

It is deplorable to see the continual ravages of typhoid-fever among young people; it seems to maliciously devote itself to cutting off in the prime of life the more healthy and useful subjects; in the end the result is a most disastrous loss to the community. Water being the one great medium of its spreading, all efforts should unite to obtain pure water supplies. The cause and the remedy being known, it is the duty of interested persons and governments to procure such help from sanitary engineering and otherwise, as will give the desired results. Do our municipal councils realize their responsibilities in this matter, and are they fully alive to their duty? We have before us to be imitated the examples of the Romans and ancients, who drew back before no expense or labor, time or distance, to obtain wholesome water, and who built in every country where they ruled those monumental aqueducts which still excite our admiration.

This points to the urgency of developing and perfecting the study of sanitary civil engineering. It is a science that should

be afforded all means of progress, and quickly placed in a position to give its much-needed powerful help to the cause of hygiene.

Among all the diseases that have been the subjects of our labors, actually none forces itself more pressingly upon our zeal than tuberculosis. This implacable affection, that may be rightly termed the scourge of mankind, continues, despite all science and philanthropy, to persistently thin the ranks of mankind, and reap its deadly tribute from every family. To it alone is due the enormous proportion of one sixth of the deaths from all causes.

Thanks to the discoveries of modern science, we now know that this disease is produced by a germ or microbe, consequently that it ranks among contagious diseases and is amenable to hygiene. The resources of sanitary knowledge must therefore be immediately brought into action to perseveringly check its destructive operations.

We are aware, at the present, that, contrary to what has been believed until recent years, the disease is rarely hereditary, and that it is nearly always acquired. We know also that the germs, once set at liberty by the desiccation of the sputum of consumptives, are to be found almost everywhere; that we absorb them with the air we breathe, and may ingest them in certain foods—milk, butter, cream, or the meat of tubercular animals.

But it is also proven that, even if such are the principal modes of transmission of the germs of this terrible disease, nevertheless they can implant themselves and evolve only in a favorable pabulum—that is to say, in a predisposed subject. This predisposition in the person may be either hereditary or acquired from the dwellings and surroundings in which we live, from our occupations, from certain diseases that we may have, or from certain causes that weaken and undermine our system.

Possessed of this knowledge, we may undertake the combat with courage, as we know in what direction to turn our efforts. We must find and reveal the best means not only of preventing the dissemination of germs in the air and their ingestion with food, but also of rendering ourselves refractory to their action and of correcting any existing predisposition, whether

hereditary or acquired; for, with the greater number of contagious diseases, the great point does not appear to be only the hunting out and destroying of the germs, but the placing of the system in such a condition that it may with impunity receive their attacks; give them no ground to work upon or to feed on; in a word, "starve" them out.

The enormous destruction of health and life caused by those three last-mentioned diseases, and the losses entailed by countries and commercial interests, demand the immediate and cogent interference of governments and municipalities. I again repeat that expenditure is necessary, but there is no excuse for refusing it for such urgent protection.

Not wishing to review all the contagious diseases and sanitary questions that have been and still are the objects of our work and debates, I will simply draw your notice to another question or two which demand the immediate attention of the Association and the co-operation of the public; I mention food adulteration, alcoholism, and vital statistics.

Food adulteration is, I should say, in most cases a crime deserving the severest punishment. It is fraught with danger, and is an important factor in the increase of premature mortality, especially among children. Even when life is not immediately endangered, a chronic intoxication is often produced that insidiously and irreparably undermines the health of many a human being, both young and old.

Urgent appeals should be made to the press, to boards of health, boards of trade, and governments to raise their warning and protective influence to eradicate such criminal procedures. Municipal laboratories should be established throughout the land for the detection of such fraudulent doings, and justice should deal rigorously with all offenders.

Could there not be a general understanding, so that in each country, each State, and each province on this Continent the same uniform methods of analysis be employed, and the same unwholesome products receive universal prohibition?

Alcoholism is the plague of many northern climates, and we are not without participating in its dire influences. It should not be allowed to escape our vigilant attention, for it is the ruin of health, of society, and of a nation. The Fates point to the gloomy picture of ancient times, but the experi-

ence of the past does not seem to have succeeded in rooting out this terrible evil, which is the harbinger and entertainer of the greatest part of all crime and vice. Alcoholism has for its share more than half the occupants of our prisons, hospitals, and lunatic asylums. Not only do those addicted to drinking intoxicating liquors most of the time throw their entire families upon the State for support, but the latter is also obliged to look after their scrofulous, idiotic, and epileptic offspring, who are incapable of providing for themselves and are often dangerous to society. Their other children, although less affected by the original taint, are generally worthless subjects—lazy, criminal, and degenerate, and form loathsome mediums for the propagation of disease and vice.

Under such conditions as these, and with such dreadful results, we pay too dearly the money that enters the coffers of the State or municipality under the title of tax or license. It is simply speculating on vice, on the ruin of wealth, health, and talents, and such speculation is nowise justifiable, and should not be tolerated under any consideration. By every means in our power this plague should be opposed, and if possible exterminated. It is more deadly than contagious diseases and more difficult to deal with. The problem is one for serious study and painstaking measures. Good work has already been done, and if the desired result has not yet been attained by the measures advocated and tried up to the present, let us not be discouraged, but set to work again. Let us find out if there are no other ways of succeeding. Are men sufficiently educated in their childhood on the dangers and terrible consequences of indulging in the use of liquors, even in a social way? And in this, as in all other matters of hygiene, why not ask more of education and not trust exclusively to legislation?

To insure the success of the sanitary reforms dictated by the progress and discoveries of modern hygiene, we must obtain the good will and co-operation of the public. For this purpose we must set before them plain facts and figures, problems solved and strikingly exposed. It is, then, of paramount importance to unite our efforts so as to bring each of our national governments and each of our States or provinces to possess and adopt a complete and uniform system of vital

statistics, in order to bring out such convincing evidence as will happily impress the public. Plain numbers alone are often sufficient to awaken them to a state of things they did not surmise. In those statistics should be included not only city districts, but rural divisions also; for, alas! in the country there are still many sad conditions of unhealthfulness and ignorance that require to be relieved.

Such are the principal questions which, with the unmentioned contagia—diphtheria, measles, scarlatina and others, the protection of infantile health and life, the destruction and utilization of garbage and refuse matter in large centres, the purifying and sterilizing of the soil, the action of pathogenic germs, the pollution of water supplies, etc.—are to be submitted to our study. I feel confident that, with such a programme, this congress will bring forth as happy results as those of preceding ones; nay, as we are always progressing, we may hope for even more.

The perspective of the future is thus very encouraging. The work done during the last fifteen years has been enormous. What may we not then expect of the next fifteen years? All over the Continent, State, provincial, and local boards of health have been organized and are working effectively; associations, conferences, and conventions are studying the most actual and urgent problems of public hygiene; everywhere, already, a prominent position is given to the teaching of sanitary knowledge; universities and schools obtain the services of competent and distinguished teachers, and are being rapidly equipped with laboratories of sanitary science; every city or district will soon have, if it has not already, its municipal laboratory worked by competent specialists.

The practical scientific working is now created and advancing. The generation that succeeds us, luckier than we in this respect, will be in possession of all that is needed to ensure success; we shall drop out wishing them courage and perseverance, and be happy if we can claim to have contributed according to our means to prepare the way for them and render less ungrateful the task we bequeath them.

Without fearing to counteract the designs of God, we may continue to utilize the talents He has given us, in seeking the

best means of protecting our health and lives and of attaining the average of longevity.

Without wishing to frustrate the decrees of His supreme justice, let us not forget that contagious diseases and epidemics, although they may in a measure serve as punishment for the waywardness of man, are most frequently the outcome of his errors and ignorance in the preservation of his health, and, as such, they should be struggled against.

The protection and preservation of one's health and that of one's fellow-being's is not only a right, but a solemn duty.

My dear colleagues, as President of the Association, I cannot close this address without acknowledging the zeal and perseverance shown by the Local Committee of Arrangements in the organization of this Congress, which they have so largely contributed to make a success. I am happy, in the name of the Association, to express our gratitude to each of them, especially to their devoted Chairman and Secretary.

To the distinguished statesmen who honor us with their presence, to the citizens of Montreal who are here assembled, and to the ladies who so largely contribute to the brilliancy of this formal opening of our Congress, the Association is grateful. Their presence proves the interest shown in its proceedings, and is a powerful encouragement to our labors and a guarantee of further success for sanitation.

To the press, that true and powerful friend of hygiene, we also owe our gratitude for the interest it has always taken in our meetings and the publicity it gives to our work.

THE OLDEST MAN IN THE WORLD.—A Frenchman now living in Russia is said to have attained the immense age of one hundred and twenty-six years. From a very interesting account of his life, just published in a Russian journal, it appears that he was born in Paris on April 17th, 1768. He has a vivid recollection of the "Terror." He joined Napoleon's army in 1798. He fought in the battles of Austerlitz and Jena, shared in the campaigns of Egypt and Spain, and finally was one of the 400,000 men who followed Napoleon to Moscow.

THE POLLUTION OF WATER SUPPLIES AND THE RESULTS OF FILTRATION.

REPORT OF COMMITTEE OF THE AMERICAN PUBLIC HEALTH ASSOCIATION, AT MONTREAL, CAN., SEPTEMBER 25TH, 1894.

By CHARLES SMART, Major and Surgeon, U. S. Army, Chairman.

IN a former report of this Committee, after reviewing the various methods of purification of water and showing their weakness, the conclusion was reached that "a water to which sewage has access should, from that fact alone, be excluded from all further consideration as a possible water supply for drinking purposes;" and the question of water supply was reduced to its simplest terms—the raising of sufficient money to bring in a wholesome water, and the investment of the health officer with power to preserve its wholesome quality, and to prevent the use of water from sources known to be unwholesome. Filtration, in the former report of this Committee, was not regarded as an efficient purifier when viewed from the standpoint which sees typhoid-fever disseminated by an infected sewage in the water supply. Of artificial filtration it was said that it had "neither the time nor the surface to permit of percolation after nature's method. Filtering beds of gravel are prepared which permit more water to pass through them in a day than nature percolates through the same area in a year, or special filters are constructed which transmit, under pressure, as much water in half an hour as nature purifies on the same area annually. The bacteria of nitrification cannot be harnessed to the work of artificial filtration, and hence the results of such methods, although manifesting a satisfactory freedom from suspended matters, will in no instance compare with the organic purity which characterizes the spring and well waters that are found in the laboratory of nature." This had a reference merely to ordinary or non-specific organic matter; but when the Committee came to con-

sider the specific cause of typhoid-fever in sewage-polluted water, it was equally positive that artificial filtration could not remove nor destroy this infection. The Committee recognized typhoid-fever propagated by well waters that had undergone a more efficient filtration through the soil than is effected by artificial filter-beds; and the story of the Lauzen epidemic seemed to indicate that a long subterranean course failed to remove the bacilli of typhoid-fever.

Since these conclusions were announced the process of artificial filtration has been studied with care in this country and in Europe. The work of the State Board of Health of Massachusetts on this subject is already classical, and Professor Koch during the past year has published his views on the efficiency of filtration. The number of bacterial colonies on a culture field from a water has little practical bearing on the quality of the water; but the number developed from a water before and after filtration gives a better appreciation of the efficiency of the filtration, so far as concerns the removal of particular substances, than can be obtained by chemical analysis. Such culture experiments have shown that artificial filter-beds are of material value in removing microbes; and that this removal has a protective value against typhoid-fever is shown by recent experience at Lawrence, Mass., where a lessened death-rate from this fever followed the careful filtration of the Merrimac water.

One of the strongest pleas on behalf of the efficiency of artificial filter-beds has been made by a Royal Commission in its report on the water supply of London, England. The report of an inspector of the Local Government Board had laid the blame of an epidemic of typhoid-fever in the Tees River Valley on the impure quality of the water supply of the Tees River. This created doubts as to the wholesomeness of the metropolitan water supply from the Thames and the Lea, and the Royal Commission was appointed. This commission considered the quality of the water of the Thames and Lea in relation to the propagation of typhoid-fever from the standpoints of both theory and experience. It showed, first, that the typhoid cases occurring annually in the valley of the Thames, above the intake, are so few in relation to the volume of the water, that the excreta of each case would have a mass

of water 5 miles long, 100 yards wide, and 6 feet deep for their dilution, while each case in the valley of the Lea would have a mass equal to 3 miles of the same width and depth. In this estimate the typhoid prevalence was taken at its highest, the river volumes at their lowest; and it was pointed out that but a small percentage of the discharges finds its way directly into the streams. Probably the greater part of the sewage of towns is distributed on farms, by which most of the harmful substances are retained; and even in hamlets and isolated houses such application to land is a common occurrence, for it is the practice of medical men to enjoin that all enteric-fever dejecta be buried in the soil and not allowed to contaminate the privies or middens. Second. The limited duration of infectivity of typhoid dejecta was pointed out. According to laboratory experiments, the bacillus of typhoid seldom retains its vitality in fecal matter for more than fifteen days. Third. The ordinary water bacteria, thriving in their natural habitat, deprive the intruding pathogenic bacilli of the conditions favorable to their development. They undoubtedly exert an influence in diminishing the vitality of the typhoid bacillus, either actually consuming it, or, as is more probable, by giving rise to products that interfere with its growth. The diminished temperature of the water, as compared with that of the human body, is another unfavorable condition; and the sedimentation of suspended matters is such, particularly in storage reservoirs, as to carry down with them three fourths, five sixths, or even larger proportions of the bateria present. Fourth. The vital action of filter-beds removes or destroys any pathogenic organisms. A new filter of perfectly purified sand has little effect in producing either chemical or bacteriological purification, but in course of use a layer charged with living microbes is deposited on the surface, and it is by these organisms, which constantly increase in number and also penetrate the sand to a slight distance, that nitrification and the arrest of other microbes are effected. Hence, the longer a sand filter has been used, the more efficient it becomes, provided it does not become so dense on its surface as to prevent the satisfactory passage of the water. This filtration by the London Water Company removes 98 or 99 per cent of the microbes contained in the river

water. Again, so far as regards pathogenic bacteria, not only has no such organism been found in the river water, but none was found in the gelatinous layer of living microbes, from the surface of a Pasteur-Chamberland filter, after the passage of a considerable volume of raw river water. The risk of the propagation of typhoid-fever by the filtered metropolitan water is therefore regarded as very small. Moreover, it must be remembered that small doses of typhoid bacillus may probably be swallowed with impunity by a healthy person, the few bacilli entering the system being destroyed by the secretions of living cells of the alimentary canal before they are able to establish themselves.

The report then goes on to consider the evidence of experience. It shows that in the contamination of the Caterham well there was no filtration of the infected water, and no dilution at all comparable with that found in the waters of the Thames and Lea. It then discusses the epidemics in the valley of the river Tees, which were attributed by Dr. Barry, the Inspector of the Local Government Board, to typhoid infection of the river water. It may be remembered that on an area of 1100 square miles, comprising 32 sanitary districts and containing a population of 500,000, typhoid-fever had been prevalent for years, and that within this area, where an infected material was ready to breed, there were 10 sanitary districts containing two fifths of the whole population, in which in 1890 and 1891 there occurred two sudden outbreaks of fever, while the remaining portion of the area had insignificant fever rates. Many sanitary faults were discovered by Dr. Barry in his investigation, but no community of any such insanitary factors was found to affect the several areas invaded by the fever; and, besides, among localities where precisely similar faults obtained, some places suffered severely, while others enjoyed almost complete immunity. But the use of water pumped from the Tees River was common to all the affected places; and immediately prior to the epidemic outbursts sudden floods had washed vast masses of filth, accumulated on its banks, into the river, and along its current to the points of intake from which the water was pumped for delivery to certain populations; and it was these populations who suffered from the exceptional prevalence of the fever.

The representative of one of the water companies criticised Dr. Barry's report. He admitted that the fever was more prevalent in the Tees drinking than in the surrounding districts, but claimed that the difference in this respect was much smaller than represented by the inspector, inasmuch as notification of cases was compulsory in most of the former and voluntary in most of the latter; and he cited the mortalities in the inspector's own tables in support of the under statement of cases in the districts not supplied with Tees water. He claimed also that many parts of the area supplied with this water escaped altogether, and that in the districts that were attacked the attacks were in parts with faulty sewerage arrangements. Moreover, he held that if the 32 sanitary districts were divided into urban and rural, without regard to their water supply, the reported fever cases would be found to have been four or five times as numerous in the urban as in the rural group. Dr. Barry in reply admitted with some qualifications the truth of these criticisms, but maintained that when due allowance was made for them, there remained a body of evidence which they were not weighty enough to counterbalance, and which constituted a strong presumption that the explanation adopted by him was the true one.

The Royal Commission refrained from expressing an opinion as to the origin of the Tees Valley fever—at least it was pleased to say so—but it is very evident from its further expressions that it regarded Dr. Barry's conclusions as fallacious. Returning to the waters of the Thames and Lea, the Commission showed that for thirty years the inhabitants of London have been drinking these waters, and no single instance of disease caused by them has become known. In a table prepared by the Medical Officer to the Council, London is compared, in regard to its enteric mortality, with fourteen other great English towns which have public water supplies that are not excrementally polluted, and it is shown that in only four of these has the enteric mortality, on a basis of ten years, been slightly lower than in London, while not only has the mortality in the other ten exceeded that of London, but in four of the towns has been twice or more than twice as high.

The conclusion is therefore reached that there is no reason

whatsoever to believe that the water, as delivered to the London consumer, is in any degree chargeable with the production or dissemination of enteric-fever. There is little chance of the presence of typhoid bacilli in the unfiltered water, and the removal by filtration of 98 or 99 per cent of the bacteria present gives efficient protection against the propagation of typhoid-fever.

Professor Koch, in discussing "Cholera and Water Filtration," attributes the protection of Altona from the epidemic which scourged Hamburg in 1892 to the filtration of its water supply from the Elbe. On this river are three adjoining cities—Hamburg, Altona, and Wandsbeck. The last has a pure water supply. The first, at the time of the epidemic of 1892, took its water unfiltered from the river; the second took its water from the river below the sewage output of Hamburg, but filtered it before distributing it. Hamburg was ravaged with cholera; the two other cities escaped. In one street, says Koch, which for a long way forms the boundary between Hamburg and Altona, cholera prevailed on the one side, but did not cross to the side supplied by the Altona water-works. The filtration at these works removed the cholera spirilla which entered the water with the Hamburg sewage. Further evidence of this was furnished during the following winter, when a break in the filter-beds, occasioned by freezing, permitted the spirilla to pass, and was followed by a notable prevalence of the disease. According to the eminent German bacteriologist, the conditions of efficient filtration, such as preserved Altona from cholera, are a layer of sand at least 30 centimetres (about 12 inches) thick, the restriction of the filtration to 100 millimetres (about 4 inches) per hour, and the freedom of the filtered water from germs in excess of 100 per cubic centimetre. The slime deposited from the water is the true filtering medium, the sand layer forming merely the basis on which it is spread.

In a recent issue of the *Lancet*, August 25th, 1894, the idea is scouted that Altona was saved by filtered water. The report is by a special correspondent, and in publishing it as such the *Lancet* takes the responsibility. It says: "A story is also related of some square where the houses are identical in almost every respect, and differ only in so far that on one

side of this square, being in Hamburg, the inhabitants drink unfiltered Elbe water, while those on the other side belonged to the municipality of Altona, and therefore received filtered Elbe water. Then follows a description of the havoc wrought by the epidemic on the Hamburg side of the square, while total immunity was enjoyed on the Altona side." The writer ridicules this, and shows that the deaths from cholera became less frequent and the houses in which such deaths occurred became farther apart as Altona was approached, but they did not stop at the boundary; they overlapped the frontier line and appeared on the Altona side. Nevertheless, he is obliged to confess that the contrast between the Altona and the Hamburg side was most striking, because there were at Altona only 3.47 cases and 2.13 deaths per 1000 of the population, while in the adjoining Hamburg district of St. Pauli, there were 25.03 cases and 12.56 deaths. But the *Lancet's* correspondent claims that the immunity of Altona during the last epidemic is no exceptional circumstance, and he shows by official figures that in previous epidemics Altona enjoyed comparative freedom from the disease at a time when its water supply was not filtered. Nevertheless, the authorities of Hamburg appear to have placed faith in the theory of water propagation as enunciated by Professor Koch. The construction of filter-beds was hastened, so that by May, 1893, they were in full and satisfactory operation, and the fact that there was no recurrence of the disease in that year is attributed to the filtered water. The beds have an area of 137,000 square metres, and filter at the rate of one and a half metres per day, or 62½ millimetres per hour, Koch's limit being not more than 100 millimetres per hour. The daily supply furnished by the active filtering area is from 120,000 to 130,000 cubic metres, or nearly 60 United States gallons daily per head to the population.

In this country until recently little effort has been made to construct artificial filter-beds. The experiment at Poughkeepsie, N. Y., was considered a failure on account of difficulties in management dependent on climate. In winter there is the liability to freeze. The superintendent at one time reported that he had been obliged to take off 300 tons of ice from an area of half an acre before he could reach the bed;

and frequently the bed would freeze while he was cleaning it, so that the sand had to be picked up and thrown out, increasing cost and endangering the bed. In summer, when the temperature reached 70° F., the growth of algæ gave the pond taste and a brown color to the water. More recently, it is said that this filter has been doing better; that the growth does not affect the color or taste, but merely tends to choke the filter, and that the running expenses have fallen to $2.94 per 1,000,000 gallons. The filter is small—only two thirds of an acre—and it filters at the rate of 2,000,000 gallons per acre. Hudson and Ilion, N. Y., and Nantucket, Mass., also have small filter-beds. At Ilion the water is aerated prior to filtration. The water of a small stream is dammed up and turned into a gravity main for transmission to a storage reservoir. This, which contains 15,000,000 gallons, is filled from the main by a fountain of 70 ring-nozzles from three sixteenths to one half inch in diameter. From these the water is thrown high into the air, where it breaks up into a multitude of small, rain-like drops before falling into the reservoir. The discharge is about 900,000 gallons in the twenty-four hours. The underdraining of the filter-beds is by the courses of bricks laid dry. The lower course is placed end to end in lines at right angles to the main collecting drain, with spaces equal to the width of the brick between the lines. These spaces, when covered by the second course of bricks, form the collecting channels. The bricks are covered with 6 inches of pea gravel, and over this 30 inches of sand of uniform grade. After passing through the filters the water is collected in a clean water basin for distribution. It is expected that the oxygenation of the water, by spraying it from the mains, will permit of efficient nitrification in the filter-beds without calling for their occasional disuse to admit of aeration of the pores.

In England some experiments have been made on an oxygenation of the filter by laying pipes in the underdrains and forcing air under a low pressure into the lower layers of gravel. Continuous filtration is said to give excellent results in the new system at Ilion, N. Y.

Artificial beds have recently been put in operation at Mount Vernon, N. Y. The available area is somewhat less than one and one fourth acres. The filtering sand is 1½ to 2 feet deep

(45 to 60 centimetres, as compared with Koch's minimum of 30 centimetres). It is divided into beds, each 15 feet wide and each 6 inches higher in the centre than in the depressions, so that when water is admitted it passes into the depressions and rises gradually over the beds. The objection to this is that filtration in the depressions will be more rapid than through the centre of the beds.

The filter at Lawrence, Mass., opened in 1893, measured two and one half acres, and filters 5,000,000 gallons a day. It is divided into beds with depressions between, so that the water may rise gradually over the sand, but a finer sand is laid down in the depressions to equalize the filtration movement. The depth of sand in these beds is 5 feet. The sewage from Lowell and other towns on the Merrimac was estimated at 1 gallon in 600 gallons of the water passing Lawrence. The annual death-rate from typhoid-fever for the five years preceding the opening of the filter-beds was 127 per 100,000 of the population. Since the opening the rate has been reduced to 26. It has already been pointed out by the Committee, that in cities using a surface water as a general supply, the death-rate from typhoid-fever is in a measure proportioned to the amount of sewage inflow into the stream above the intake. When much care is exercised in preserving the purity of the water, the average annual death-rate for a series of years becomes reduced to 25, 20, or even to 15 per 100,000 of the population; but no matter how pure the general supply may be, we seldom find rates lower than that last mentioned. This is to be attributed to the fact that typhoid-fever may be propagated in other ways than by an infected water supply. It may, for instance, be imported into a city by individuals who have travelled during the period of incubation. In crowded and unclean tenements typhoid-fever may be seen to be directly contagious, by the inhalation or swallowing of infected dust from soiled bedding or other articles, or by the transferrence of typhoid bacilli into the stomach by eating with unwashed fingers. The susceptibility of washerwomen and others who have handled the undisinfected body linen of fever patients is now well understood. The propagation of the disease by the leakage of sewage into wells is fully appreciated, but the infectious character of sewer air, for so

long a firmly established belief, is now laid aside in view of bacteriological experiments. Nevertheless, it is possible that typhoid bacilli may be present in sewer exhalations, particularly when the exhalations are taken in their full strength, as in the steaming outflow from a sewer ventilator. Nor must we forget the possibility of *de novo* cases, or those which many medical men regard as *de novo* cases, caused, irrespective of a previous case, by organic exhalations—*i.e.*, bacterial exhalations from the organic matter of a soil drier than that which gives rise to malaria; or even caused by some abnormal condition of the intestinal contents which permits of the development of pathogenic qualities by a native and ordinarily harmless intestinal bacillus. With these questions we have at present nothing to do, except as they remind us that typhoid-fever may be propagated in other ways than by the infection of a general water supply. The Royal Commission, cited above, is of the opinion that if typhoid bacilli enter the waters of the Thames and the Lea, and survive the conditions affecting them in the current, they are separated by the filter-beds, which remove 98 per cent of all micro-organisms present in the unfiltered water. The typhoid-fever death-rate of 20 to 28, presented by the mortality returns of London, must, therefore, express the prevalence of typhoid-fever as propagated by other methods than the water supply. In view of this line of argument, we may, therefore, regard the typhoid rate of 24 at Lawrence as a satisfactory proof of the efficiency of filtration as there conducted, in removing the infection from a highly polluted river water.

From this brief review of facts and opinions concerning filtration, it will be seen that your Committee hesitates to reaffirm its former positive language with regard to the inefficiency of filtration as protective against typhoid-fever. Nor, on the other hand, do we regard the testimony as authorizing a formal declaration of opinion in favor of the efficiency of filtration. Our experience in this country is, as we have seen, extremely limited, but it is hoped that the success achieved at Lawrence will lead to the filtration of other surface waters, each of which will probably teach an important lesson in connection with bacteriological experiments and with the mortality from typhoid-fever before and after the con-

struction of the filter-beds. If every municipal health officer would calculate the typhoid death-rate of his city, with the understanding that any annual rate over 25 per 100,000 of the population is due to preventable causes, and probably to the character of the water supply, he would be in a position to urge important improvements in connection with that supply.

The question of rapid or mechanical filtration with the use of coagulants, as in certain patented processes, has been discussed during the past year. These, the descendants of the Hyatt and Newark filter, furnish a rapid stream of clear water for several hours, and then wash the filtering sand by the disturbance created by a reversal of the current, continued until the wash water comes away clear. The conditions in these filters are so unlike those of natural filtration, that your Committee, when referring to them on a previous occasion, gave expression to its unfavorable views, but desired information as to results obtained. Recently F. W. Cappelen, C.E., Minneapolis, reported to the City Council on the applicability of mechanical filtration to the river water of that city. This gentleman inspected the filter plant at New Orleans, La., put in by the New York Filter Co., where the contract provided for 14,000,000 gallons of clear water, free from opalescence, every twenty-four hours, the resistance in the filters not to exceed 15 pounds when dirty nor 6 pounds when clean, with a certain restriction on the expense for coagulants.

The river water at New Orleans contains a turbidity which resists a natural sedimentation for many days, notwithstanding the large quantity of sandy particles which fall readily. The plant is said to have worked well with one and one half grains of alum during the six months of the year that the water is loaded with impurity, and with five eighths of a grain during the other half of the year, when the water is in better condition. At the time of Mr. Cappelen's visit "the water was the worst so far met with, and for two days baffled the efforts of the filter company to comply with the contract, and only after using about two and one fourth grains of lime with two grains of alum per gallon was clear water obtained." Nevertheless, he was impressed favorably with the results, and recommended a plant of this kind for his own city.

The *Engineering News*, in discussing filtration for the water

supply of Providence, R. I., looks at these methods of mechanical or rapid filtration from the financial standpoint, and gives no information as to the efficiency of the filtration other than that a clear water is obtained ; and, in a letter to the editor, the vice-president of one of these filter companies endeavors to show that filtration by the method of his company is cheaper than by the construction of sand filter-beds, a position which is denied by several eminent civil engineers. With this question we have little concern, so long as sanitary questions relating to the chemical and bacteriological qualities of the clear filtered water have not been answered. These filter companies have been long enough before the public to have had time to demonstrate more than the clearness of their filtered water, if there was more than this to be demonstrated.

Your Committee can hardly leave this subject of water filtration without referring to the importance which Professor Koch gives to the stores of filtered water which are to be found in the subsoil, even in soils which have been much and for a long time contaminated, as in that of Berlin. He testifies to the bacterial freedom of such waters. Especially is this the case, he says, if the boring goes through an upper impermeable layer into deeper sand or gravel layers containing the water. Your Committee can readily accept Professor Koch's views as regards deep well-water, which filters for long distances between impermeable layers ; but in view of the many bad waters that are contained in shallow wells, we feel satisfied that the filtration into them is inefficient.

The German bacteriologist attributes all epidemics from wells to unfiltered inflow through cracks and fissures, and proposes to remedy this and reclaim the water supply by inserting an iron pump, and filling up around it with gravel and sand, so as to insure an efficient filtration to the lower end of the pump. We have seen that at Lawrence, Mass., artificial filtration through 5 feet of sand apparently purifies a sewage-polluted water ; why, then, should not Koch's views be correct, and a natural filtration through many feet of sand and natural soil be equally efficient? The answer to that is that in our cities the danger to wells comes not from the surface, but from the subsoil. We may fill our wells with sand, and every drop of surface water may be efficiently filtered, but the dan-

gerous leakage may be from some subsoil channel between a leaking sewer and the well. Hence, we consider that our municipal health officers have done well in closing up all subsoil wells within their jurisdiction, because it is not surface inflow which we fear, but subsoil inflow. Of course, if chemical or bacteriological examination show contamination either from the surface or the subsoil, all such wells should be condemned.

Before concluding this report, the Committee desires to refer briefly to the Potomac water supply of Washington, D. C., as the report of a medical commission on the prevalence of typhoid-fever in the city forms part of the record of progress during the past year. The Potomac River supply is distributed by gravity, with no purifying process to free it from sometimes very large quantities of suspended clay and associated organic matters, washed down in part from farming lands and such settlements as Harper's Ferry. A Committee of the District Medical Society, appointed to investigate the subject, acknowledged the unusual prevalence of typhoid-fever, an average annual rate of about 75 per 100,000 of the population, but attributed it first and chiefly to the use of well waters; and the wells are now undergoing chemical microscopic scrutiny, with a view to closing up any that furnish water of doubtful quality. The evidence on which the typhoid prevalence was attributed to the wells is not so clear as to satisfy every one, and particularly do those who have been deprived of their well-water object to the conclusions of the committee. Many other conditions likely to promote the prevalence of typhoid-fever were mentioned by the committee as present in Washington, D. C., and suitable recommendations were made in each case; but it was not until sixthly was reached that a suspicion was thrown on the general water supply.

In view of an unbroken record of typhoid-fever in communities that use raw river water, and an equally unbroken record of lessened typhoid rates following the filtration of such river supplies, your Committee considers that in Washington, D. C., special attention should have been given to the improvement of the general supply. This country needs some practical lessons in methods of water purification. Law-

rence, Ilion, and Mount Vernon have been contributing to the general good, but aeration and filtration at the National Capital would have done more to suppress typhoid-fever in this country than by merely reducing the typhoid death-rate in Washington, D. C. It would have led to a more general interest in improved water systems, and brought the question home to many municipalities.

In conclusion your Committee desires to invite attention to a proposition emanating from the McGill University of this city, for which credit is to be given to Professors J. George Adam and Wyatt Johnson, the latter a member of this Committee. Impressed with the difficulty of reconciling observations made upon water bacteria with the description of the various species that have been published up to the present time, and recognizing how much good and useful work is lying unpublished and incomplete, from the fear lest publication should, after all, result in re-naming species that have already been described and adding to the confusion already existing, these gentlemen desired to do something to aid in remedying the present unsatisfactory conditions. As the task of establishing order out of the present chaotic state of the literature of the water bacteria is too great for one man to undertake, the idea of a co-operative investigation offered the only prospect of a speedy advancement in this line of work. "If," says Professor Adam, in a letter to the chairman, "in such a combined investigation one group of water bacteria were to be assigned to one laboratory for study and classification, one laboratory, for example, dealing with vibrios, another with the B. coli group, another with the fluorescent forms, and so on, and if each laboratory were to send to the investigator of one special group every distinct variety of that group making its appearance in the waters studied in that laboratory, the mass of material so gained would form an ample basis for an authoritative monograph upon the members of that group found in American waters, and such a monograph published in this way would of necessity become the standard of reference." There are, of course, several details in connection with such a scheme requiring careful elaboration in order to make success attainable—details of modes of classification, of preparation of standard media, of periodic

conferences of those engaged, of method and locality of publication, etc. All these would have to be considered and determined according to the wishes of the majority of those interested before a start could be made ; but the settlement of these details ought not to present insuperable difficulties.

Your Committee considers that a great advance may be made by the practical development of this suggestion ; and to further the accomplishment of this, it recommends that, when its membership for the coming year is announced, it may be authorized to increase the number of its members by adding to the list the names of such investigators as may be willing to co-operate in this scheme of bacteriological study.

CHARLES SMART, *Chairman.*

THE WATER SUPPLY OF PHILADELPHIA.—*The Medical News* calls attention to what has been frequently shown in its columns, that there is but one right way to improve the water supply of Philadelphia—namely, the plan first advocated by Dr. Henry Leffmann—the erection and maintenance of an adequate filtration plant. The source is a secondary matter. If filtration shall fail, or if the Delaware and Schuylkill should run dry, the building of aqueducts may be considered. Until such a contingency arises there should be but one question before the municipal authorities—namely, the best and quickest way of building the necessary filtration basins. We suggest the appointment of a commission of experts selected with the co-operation of the College of Physicians (as the senior medical body of the commonwealth) to act in conjunction with the Department of Public Works.

RADICAL DIFFERENCES IN METHODS OF PRODUCTION AND CULTIVATION OF VACCINE LYMPH.*

By SAMUEL W. ABBOTT, M.D., of Wakefield, Secretary of the State Board of Health of Massachusetts.

IN this paper I shall point out briefly some of the different conditions under which vaccine lymph is cultivated and produced for the purposes of vaccination, at the present day, having special reference to that which is termed animal or bovine vaccination.

Biologically speaking, all vaccination is animal vaccination. At the present day vaccination with non-humanized or bovine lymph is the rule in the United States, and probably 90 per cent of all vaccinations throughout the country are made in this manner. With the exception of the infinitesimal liability to infection by syphilis or other human disease, as was conclusively proven by Dr. Cory, of London, in July, 1881, by submitting himself for experiment, there can be no objection to the method with humanized lymph.

In many countries of Europe humanized vaccination is practised to a considerable extent. The old Jennerian method had taken so strong a hold in England that it is not an easy task to change it. Another reason exists in the peculiarity of the English law, which requires every child vaccinated at the public expense to be presented again to the vaccinator for inspection at the end of a week, under a penalty of £1, the vaccinator having the legal right in every case to obtain a supply of lymph from the child for future use. The tendency of this law is to make the change from humanized to non-humanized lymph somewhat difficult. The use of bovine lymph, however, is steadily gaining ground in England.

In France, on the contrary, the fact that it was lawful to pay to the mothers of children a fee of several francs for the

* Read at the Annual Meeting of the Massachusetts Medical Society, June 12th, 1894.

privilege of taking lymph from the arms of infants, may have been one of the minor causes which proved a hindrance to "arm-to-arm" vaccination, and may have led to the more rapid introduction of animal vaccination.

The greatest advance in use of calf lymph in foreign countries has been in Germany, where the ratio of such lymph used increased from about 2.5 per cent in 1879 to 7 per cent in 1882, and then still more rapidly to 78 per cent in 1888, and 89 per cent in 1889, and will probably soon entirely displace the use of humanized lymph.

The radical differences in the methods in use in different countries for the production of calf lymph may be stated as follows:

1. The existence to a greater or less extent of *government supervision or control* in nearly every foreign country.

In England the Local Government Board, which constitutes the general sanitary authority of the country, established a station in London about twelve years since, which has been constantly under the supervision of Dr. R. Cory.

In Belgium a national vaccine institute was established by the government in 1865, under the direction of Dr. Warlomont, who is one of the highest authorities on the subject in Europe. His works are accepted as standards as to the technique of calf vaccination.

In France Dr. Lanoix introduced the practice in 1865, having learned its value from Dr. Negri, of Naples, while the former was on a visit to that city. As a result of the efforts of Dr. Lanoix several private establishments followed the introduction of the practice at Paris, and some of the French cities have establishments maintained at the public cost. There are also one or more societies in Paris which maintain calf vaccination and furnish vaccination free to those who apply for it.

In Germany the government provides by law for the establishment of public stations for the production of calf lymph in all of the large cities, at present twenty-five in number. It also provides for the general supervision of all these establishments under the most careful and minute regulations. Each establishment is required to give an annual report of its operations, a summary of which may be found in the reports of the

Imperial Board of Health. These stations furnish annually enough lymph to vaccinate about two million persons.

Similar, though not so careful, regulations exist in Holland, Austria, Italy, and in Japan.

Contrast with the foregoing statements the methods in vogue in the United States. With the exception of one station in Minnesota, now successfully conducted under the direction of the State Board of Health by Dr. Hewitt, I know of no establishment which has any supervision whatever.* As a consequence there must be a great diversity in the methods employed and in the material produced.

2. *Vaccine Lymph as an Article of Commerce or Trade.*— Partly as a consequence of submitting quietly to the method of production of vaccine lymph by private parties in this country, the business has become very largely commercial in its character, the private producer conducting his operations in such a manner as to secure the greatest possible returns with the least possible outlay of money. Vaccine lymph is bought and sold, and competition in prices naturally leads to deterioration in the quality of this important article, which should be freed from every influence which may in any way lead to its impairment. But the danger lies not only in the fact that it is an article of commerce, but still more in the *methods* of its sale. The business is entrusted to druggists, middlemen, and travelling agents, who solicit orders very much after the manner in which boots, shoes, dry goods, and patent medicines are sold. But vaccine lymph is an extremely perishable article, while dry goods are not. As a consequence of this method of sale, vaccine lymph often remains for weeks or even months in the drawers and unbroken packages of the middlemen or agents, and when needed for use the guarantee of the producer is disregarded, and the lymph of several weeks or months ago is sold and finally used for vaccination. As a result it proves inert, and the consequence is charged to the insusceptibility of the infant or vaccinated person. As a matter of fact, when vaccination is conducted under the best possible conditions of fresh lymph, insusceptibility is found not to exist, or at least to be a matter of the rarest occurrence.

* At the time of writing this paper this statement was correct.

Dr. Cory stated that he had vaccinated nearly fifty thousand infants with but one unsuccessful result, and in this exceptional case the usual opportunity for repeated trial was not afforded. (See Second Report of Parliamentary Commission, 1890, p. 142.) If such vaccinations are being made during a brisk epidemic of small-pox, and in families which have been exposed to the disease, it may happen that some children will take the disease and die, during the delay occasioned by waiting to ascertain whether the lymph of uncertain source and age will prove successful or not, and thus the practice of vaccination falls into disrepute. Guarantees, it is true, are given that a new supply will be furnished in case of failure, but of what avail is a guarantee if the exposed person meanwhile contracts small-pox and dies while trying the experiment of waiting to see whether the old lymph will "take" or not?

Now, one remedy for this condition is the abolition of middlemen, the procuring of lymph direct from the producer, and the stamping of every package of lymph with the date of its collection—an improvement which cannot very well be accomplished under existing conditions in this country. Government production can do away with the incentive to profit, and furnish the lymph either at cost or free of all cost. The question of expense ought to be the last consideration which should be allowed to interfere with the production of an absolutely faultless lymph.

In an excellent paper by Dr. Harvey Reed, of Ohio, some of these points are highly commended. (See *Monthly Record*, published by State Board of Health of Ohio, Vol. VII., p. 97, 1894.)

3. *Methods of Insertion and Implantation.*—Bovine vaccination is initiated in the heifer or calf by several different methods, or rather from different sources:

(*a*) By the introduction of humanized lymph taken from the vesicles of a primary vaccination.

(*b*) Animal lymph, subject to the same conditions as humanized lymph—*i.e.*, direct or fresh lymph dried upon quills or ivory points, or mixed with glycerine and carefully preserved.

(*c*) The solid and fluid parts of the so-called natural cow-pox.

These are the methods advised by the German Government in its law of April 28th, 1887, and, as may be seen, preference

is given by this law to the use of humanized lymph for the purpose of initiating a series of calf vaccinations. If this government gives such counsel, a government which does not enact laws except upon the basis of careful observation and experiment, and employs for its purposes men who are acknowledged experts, are we to blindly follow the statements of those who have taken up this line of work merely as a source of profit or trade, and without giving scarcely a thought to the scientific side of the question?

There has been much speculation upon the question whether small-pox and cow-pox are one and the same disease, the latter being only a modification of the former, and this speculation has continued for a century. But the brilliant discoveries of modern bacteriology throw a flood of light upon the question, by experiment, by observation and by analogy. We are forced to conclude that vaccinia bears very much the relation to small-pox, after transmission through the cow, that attenuated rabies after transmission through the rabbit bears to the exceedingly fatal and virulent disease in the dog, or that anthrax after successive attenuations bears to the extremely fatal disease in its natural form, as was demonstrated in the most brilliant manner by the experiments of Pasteur upon a herd of sheep and cows at Melun in 1881. All these experiments are only applications of the process of artificial selection by the hand of man to those organic bodies known as bacteria by the proper use of soils and methods of cultivation. And if it is possible to diminish the virulence of infectious processes by such methods while the protective power still remains, is it not also possible by certain methods to re-establish the original virulent characteristics, while still retaining the protective power? Or, if those original virulent properties are not re-established, may not other and abnormal processes of a dangerous character be established in their place?

At a meeting of the Suffolk District Medical Society in February last, a committee which had witnessed the process of animal vaccination at some establishments in this State, stated that animals were being vaccinated by means of large scarified patches, each of which would cover an area of several square inches, and were more or less exposed to soiling by the excreta of the animal. It is a question worth considering

whether this plan continuously pursued may not in time re-establish to some extent the serious characteristics of the original disease.

There is no clear evidence to show that cow-pox originates in the cow. The mere fact that casual cases of cow-pox are to be found in the cow proves nothing. To call them "spontaneous" is contrary to all progressive knowledge as to the natural history of infectious diseases. One might as well call an oak-tree in the forest "spontaneous" because he cannot find the acorn from which it was produced.

In 1870 or 1871 great pains were taken to import vaccine lymph from Paris for the purpose of animal vaccination, and the name "Beaugency" curiously enough became a symbol of purity in this important article, as though this infectious disease, "cow-pox," was unknown except in foreign lands, and yet at that very time dairymen within a dozen miles of this city were separating infected animals from their herds to prevent its further spread, being themselves familiar with the peculiar characteristics of the disease.

Let us now consider for a moment the following points, which have a direct bearing upon the natural history of casual small-pox. By the term "casual" I mean those cases which have been occasionally found among dairies, and were not intentionally inoculated—that is to say, vaccinated for the purpose, either of experiment, or for the production of an increased quantity of vaccine lymph.

a. Casual cow-pox in the cow usually occurs during epidemics of small-pox among men. All of the cases which I find on record in this country for the last half century—about forty in all—occurred in years of small-pox epidemics. In Europe its occurrence was still more frequent in the early half of the century. It still occurs in Gloucestershire, where Jenner first saw it, but not so often as in his day, when small-pox was much more common than now.

Ceely's cases, recorded in his papers, occurred in 1838, a year in which there were 16,000 deaths from small-pox in England. One case is recorded in which some old clothes, stripped from a small-pox patient, were thrown into a meadow where cows were feeding; and the cows, having access to the clothing, were attacked with cow-pox.

The famous so-called spontaneous case at Beaugency occurred in the French Department of Loiret in 1866. In this same department, during the ten years 1861–71, there were more deaths from small-pox in a population but little greater than that of Essex County, than there have been in the whole State of Massachusetts in the past twenty years, in a population of 2,000,000 or more. Now, when we know from the experiments, not only of early observers, but of quite recent experimenters, such as Haccius, Eternod and others, that vaccinia may be induced by the inoculation of small-pox upon animals, is it strange that such cases should occur casually in times of epidemic?

b. There is no evidence that cow-pox occurs among animals in the wild state. No doubt, it may be induced among them, but I find no record of its casual occurrence among them. Buffaloes are susceptible to inoculation with vaccine lymph when artificially introduced.

c. Casual cow-pox does not occur among bulls. (Ceely.)

d. It does not occur among cows which are dry. (Ceely.)

e. There is no evidence that cow-pox is transmitted from one animal to another in herds except through human agency.

From these facts it would appear that cow-pox occurs, not only among those animals which are associated with man, but with those which are associated with him in the most intimate and daily contact and handling of the animal; and it is manifested upon those parts of the animal which are chiefly exposed to such contact—such a contact, in fact, as would be likely to impart infection to her by the hands, provided such infection should in any way be possessed by the milker.

In the case of horse-pox, a disease of the heels or hoofs, what part of the horse is more often touched by human hands than his hoofs or heels?

The cow is, therefore, simply our ally or efficient helper in the great scheme of disease prevention, enabling us for the time being to employ her as a means of procuring, cultivating, multiplying, and diminishing the virulence of the proper means of defence.

So also the rabbit plays no part in the natural history of rabies, but yet acts as an important ally in preventive treatment.

I speak of these points because too great importance has been attached, in this country, to the comparatively unimportant question of pedigree, or stocks of animal lymph, to the exclusion of far more weighty questions which have been neglected.

But to return to the question of the best mode of insertion or implantation of lymph in the animal.

Three methods are chiefly practised :

a. Puncture ; *b.* Incision ; and *c.* Scarification.

These terms are in themselves sufficiently explicit as to the modes of insertion. In foreign establishments the first two methods are chiefly practised, though scarification is also sometimes employed. In an inspection of certain continental establishments which Dr. Murphy made for the Local Government Board in 1883, he found that in the Dutch establishments vaccination by puncture had entirely taken the place of incision, for the reason that the " vesicles resulting from incision have a greater tendency to become advanced and purulent than those resulting from puncture." In Brussels incision is still practised.*

The incisions referred to are not more than 10 to 12 millimetres in length, and 4 to 5 millimetres in depth. Now, if incisions were abandoned for reasons of this character, what can be said of the method by scarification in practice in some places in this country, where many surfaces having an area of from 1 to 4 square inches (6 to 25 centimetres) are inoculated ? These scarifications, too, are allowed to progress two days beyond the usual period advised by the best authorities, and are made in a region where the daily soiling of urine and feces may have free access to the scarified surfaces. These large surfaces are attended with swelling, not only of the surrounding integument, but also often of the neighboring lymphatic glands, and if there is any reason for imitation of natural processes—that is to say, in the production of vesicles like those of variola, having a diameter of 5 to 12 millimetres—then a process of scarifications of large size carried on through 500 to 1000 generations, as has been done, may in time reproduce a severe type of vaccinia which shall possess far more virulence

* Thirteenth Annual Report of Local Government Board, Supplement, p. 27.

than the form with which we have for a long time been familiar.

4. *Age of Animals.*—Unvaccinated bovine animals of any age are susceptible to cow-pox artificially implanted. As a general rule the average age of animals used for purposes of vaccination in the United States is greater than that of animals used in most foreign countries. At two of the establishments in Massachusetts adult animals, or at least animals over one year old, are used, and at two others calves of three to eight months, while in several establishments in other parts of the country animals varying from six months to two years are employed.

In two or three small German cities heifers of one and two years are employed, but in most of the German establishments the average age is about three months. The law upon this point reads as follows: "Section 2. Older animals are only to be used when calves cannot be had. The calves should be at least three weeks old; . . . calves of five weeks old and upward are to be preferred." Law of the Bundesrath, April 28th, 1887.

The average age of calves used in Holland, as stated by Dr. Murphy, was "three to five months." Those used at the principal station in London are about five months old.

Warlomont states the question by weight, and says that the calves should weigh at least 100 kilogrammes (about 220 pounds) each.

Vaillard says: "Il y a cependant un reél avantage à utiliser de préférence les jeunes sujets, âgés de deux mois et demi à trois mois."

From the point of economy there are some advantages in the use of adult animals. The chief end secured is the increased product of lymph.

This is offset to some extent by the increased cost of care and food.

On the other hand, the advantages of employing young animals are mainly those of convenience and sanitary security. Young animals can be more conveniently handled and are almost absolutely free from the danger of tuberculosis.*

* Vaillard, "Manuel pratique de la Vaccination Animale."

Vaillard further says: "Out of 21,320 calves slaughtered at Augsburg not one was tuberculous, while out of 10,988 horned adults 321, or 2.9 per cent, were tuberculous. At Munich there was scarcely one tuberculous calf in 100,000, and at the slaughter-house at Lyons the record showed only five tuberculous calves out of a total of 400,000 animals in a period of five years."

In summing up this phase of the subject, then, the transmission of the infection of tuberculosis is rendered extremely improbable by the following facts:

a. By reason of the age of vaccinifers, calves or young animals are chiefly used. The young of the bovine species are more exempt from tuberculosis than the young of the human species.

b. Supposing an animal to be tuberculous (that is, having tuberculous organs), there is but little reason to believe that the tubercle bacilli will be found in the serum of vaccine lymph taken from the integumentary portions of the animal.

c. Finally, if the vaccine lymph should actually contain tubercle bacilli, experiment has shown that, by the ordinary methods of superficial insertion, there would be no danger of implanting the germs of tubercle where they would infect the subject, since tubercle bacilli can only be successfully transmitted by deep inoculations, not by superficial scarifications.

Upon this point, then (the age of animals), the preference does not appear to be a matter of so great importance as might at first thought be supposed. But, all things considered, animals of less than one year of age ought to be employed.

Bovine animals, it is true, are subject to other diseases beside tuberculosis, but it does not appear that there is danger of their transmission to man by means of vaccine lymph.

5. *Time of Collection of Lymph.*—In no point does American practice, so far as I can learn, differ from that of foreign establishments so radically as in the time which is allowed to elapse between the vaccination of the animal and the collection of the lymph. In the United States the older vaccinators, following blindly the same practice employed for collecting lymph from infants, as a rule established the custom of taking the lymph at the end of a week, and this has become

almost an established rule of practice, with possibly some exceptions in which collection has been made a day earlier. A better way of expressing the time, in order to avoid ambiguity, is to state it in hours, as multiples or fractions of 24. The average time in practice in the United States then may be stated as 7 times 24 hours (168), or in exceptional instances 6½ times 24 (156) hours from the time of insertion, while the average period in Germany, Holland, Belgium, and England is at least as brief as 5 times 24, or 120 hours. This custom in the last-named countries has been established as the result of careful observation, and experiment of a very large number of observers, most of whom are acting under government supervision and have nothing in view but the absolute welfare of the community, independent of pecuniary considerations.

The practice of short periods has certain decided advantages:

a. The shorter the time the less the liability of the vesicle to become purulent at the time of collection.

b. During a period of four, five, or six days the vesicle is much less liable to become ruptured or infected from without than when it is allowed to continue to the seventh day (168 hours) before the lymph is collected. This is a matter of vital importance, and when viewed from a bacteriological standpoint, involves to a very considerable extent the purity of the lymph produced.

The *disadvantage* of short periods, when the question is viewed from the standpoint of private ownership of vaccine establishments, consists in the fact that the quantity of lymph to be obtained from a vesicle or group of vesicles at the end of 120 hours from the time of insertion of lymph, is very much less than that which can be obtained from the same vesicle or group of vesicles at the end of 168 hours, when the vesicle has attained a greater size and degree of development. This is, however, a purely economic and not a sanitary view of the question.

6. *Disinfection—Cleanliness.*—The term "asepsis," as sometimes used in connection with this important work, may almost be deemed to be synonymous with absolute cleanliness in every detail.

Vaccination is itself an infective process, hence the use of

disinfectants, if they are used at all, must be intelligently conducted, and they should be so employed that nothing of a disinfectant character can touch or enter, or otherwise affect the lymph itself during the process of collection or afterward. Not only should the buildings themselves be constructed of materials which will admit of thorough cleaning, but the administration should be such that the animals shall have the best possible care, grooming, and feed; the stalls, floors, mangers, and walls must be kept clean, the excreta frequently removed, the operators and attendants must have scrupulously clean hands, and all instruments used should be thoroughly cleansed in boiling water after each use.

The following provisions of the German law of 1887 relate to this subject, and are worthy of general adoption:

"Section 14. All of the implements used in vaccination and the collection of lymph, as well as those used in the subsequent handling and transporting of it, must be of a material and shape permitting thorough cleansing and disinfection. They must be used for one purpose only, and before and after each use they must be cleansed and disinfected when necessary.

"Section 16. The surface selected for vaccination must be shaved and thoroughly washed with soap and warm water. Afterward it must be disinfected with a solution of mercuric perchloride (1 to 1000), or a 3 per cent solution of carbolic acid, and finally rinsed with boiled water."

7. *The Slaughter of Animals before the Use of Lymph.*—This practice, so far as I have any knowledge of the question, is not carried out in the United States. It has, however, been the rule for many years at the Belgian Institute under the charge of Dr. Warlomont.

All possible danger of suspicion as to the preparation of animal vaccine may be removed, "by delivering it only after the animal from which it is taken has been proven by autopsy to be perfectly healthy. This is a precaution that should not be neglected." (Warlomont.)

Here again the German law is quite explicit, and reads as follows:

"Section 5. After taking the vaccine lymph the animals must be killed and examined by a veterinary surgeon. The

examination should especially be directed to the condition of the navel and of its vessels, the peritoneum and pleura, the lungs, liver, and spleen.

"Section 6. The veterinarian must give a certificate of every examination.

"Section 7. The lymph must only be issued to the vaccinating physicians when the autopsy shows that the animal was healthy."

The following section of the same law, although not related to this special subject, shows the general progressive character of modern legislation in Germany in this direction.

"Section 33. The public vaccine establishments are in duty bound scientifically and practically to improve vaccination, and consequently to carry on investigations by way of experiment, clinical observation, or otherwise."

In summing up this phase of the subject, then, I believe that improvement may be made in the production of vaccine lymph in this country by the adoption of the following general and special measures:

1. Cultivation and production of vaccine lymph by the United States Government for the use of the Army, the Navy, and the Marine Hospital Service, and for all public institutions managed by the Government.

Each State to produce its own lymph for the use of its public institutions and for the use of all local boards of health of cities and towns.

2. The abolition of agents and middlemen, and the issuing of lymph directly from the producers to the parties who use it, every package to be stamped with the date of its collection.

3. The employment of better and more uniform methods of inoculating animals.

4. The exclusive use of animals less than one year old.

5. Limiting the time of collecting of lymph to a period of five days, or at the outside to six days from the date of its insertion.

6. The adoption of careful rules for every establishment relative to cleanliness, the care of animals, etc.

7. If adult animals are used, a requirement that they shall be slaughtered before the lymph is issued.

THE MILITARY HOSPITAL OF HAVANA.*

THE *Boletin de Medicina Naval* of September last gives the following description of the hospital, which cannot fail to interest those engaged in investigating the progress of contagious diseases. The director of the *Boletin*, Dr. A. F. Caro, endorses it as follows:

"A periodical of Havana, an enthusiastic defender of all measures of interest to public health—*La Hygiene*—has inserted in its columns the article which we republish, not only as an acknowledgment of the courtesy of the author, but to comply with a conscientious duty, for, however painful it may be to admit the facts, all that is said in the article is rigorously true."—A. F. C.

It would seem like publishing a false statement to say that, in a city like Havana, the capital of the island of Cuba, so little value is attached to the lives of rational beings; it seems impossible to believe that, in a country under a military government, a house having none of the conditions demanded by science and claimed by the simplest feelings of humanity should be destined for the care of the sick soldiers.

The military hospital of Havana was not built for the purpose for which it is now used; it was originally a *factory;* it has been used as a warehouse for the storage of merchandise; now it is an asylum for sick soldiers. It is situated in the lowest ground at the south of the city of Havana, in the district of Atarés, and completely closes the narrow street known as Suárez; it is bounded on the north by the street Diaria; on the east by the wall or *tapia* of the arsenal, from which it is separated by an alley six metres wide, through the middle of which runs an open drain; on the west by the street Revillagigedo, and on the south by the marshes which lie on the shore enclosed by the wharfs of Tallapiedra.

* The writer of the article appends to it the following note: "We dedicate the present inquiry to Drs. Rodriguez Mendez, of Barcelona, and Fernandez Caro, of Madrid, hoping that, with the extensive knowledge they have of the subject, they may make the condition of this hospital known to those who believe that the climate of Cuba is alone responsible for the horrible mortality."

The building is situated so low that, at the northwest and west, the pavement of the adjoining streets rise to the height of about two metres around the hospital.

Enclosed in the ward J. Mearia, it belongs to the street Diaria, the whole of the district being inhabited by poor families.

At the front, which faces the north, is the entrance, after passing which it is necessary to descend by an inclined plane to the gallery of the lowest story ; in the front is the office of the director—a small and very old building, whose floor is made of large tiles of very variable size ; the doors and windows are small and admit but little light. Passing to the west by a narrow corridor various dark apartments are reached which are both grimy and damp, and here are found the dungeons of the officials and the room of the military prisoners. All these appendages are miserable structures, with very poor floors, and the ceilings are without paint ; the walls are covered with moisture, showing the condition of the air in the rooms, which are situated two metres below the level of the street. Surrounding the central court on the west are found the best of the annexes, being the baths and the kitchen, which are of more modern construction and the only parts of the institution that deserve any praise.

Toward the south is found another gallery which gives access, through an extensive opening, to the marshes of the shore. It is this marshy ground that reveals the nature of the ground on which the hospital is built. The earth is quite black with foulness and by desiccation is always giving off noxious vapors. On this marsh are many huts ; here may be found the hovels of the Chinese, along the eastern side of which runs the open drain of the arsenal ; the barracks of the sanitary corps to the west of the Chinese quarters ; the dead-house and other dilapidated dependencies crowded together in a ruinous condition.

The drain from the arsenal needs a separate paragraph. It runs uncovered, and without a proper channel, between two buildings belonging to the State—the arsenal and the hospital. When it enters on the marshy ground at the south it mingles at the entrance with the excrement and waste of the latter, which are deposited there with the garbage and filth from the

Chinese quarters and with the detritus from the marshy ground. Farther on, when it reaches the end of the drain, the filthy mass is mingled with the no less filthy water of the bay. In warm, dry weather an embankment is formed consisting of the excrement and solid materials, and this separates the drain from the sea and causes the slow evaporation and the consequent dissemination of the foul gases through the atmosphere in the vicinity of the quarters of the Chinese and of the insane, which fronts on these horrible marshes ; and its doors and ventilators are open to the foul air that surrounds the hospital on the south side.

The wharfs in front are always covered with merchandise and wood and other articles in a state of decomposition, from which they can hardly be freed, because there is no outlet for their removal except through the street on the west.

Returning to the building and directing our course toward the east, we find some small and rather filthy apartments occupied by the attendants, the pharmacy and some rooms, the windows of which look out on the drain, of which mention has just been made. The air that enters these apartments is saturated with miasmatic vapors from the marsh and filled with swarms of hungry mosquitoes.

Just in front of the entrance door is a stairs which leads to the principal floor of the building.

This stairs is the only one for all the service of the hospital ; by it the patients go up to the floor above, and all the food is brought through it to be distributed above ; the dead bodies of all who die in the wards above are brought down by it ; it is the only way in which the uncovered vessels containing the stools and other waste from these wards can be removed.

All the wards are closely connected with one another ; the principal one, which has eighty-four beds, is miserably poor ; the beds are of iron and very old ; the floors are of brick and much worn ; the ceilings are without paint, and so very low that in summer the great heat of our tropical sun, falling directly upon them or reflected from the surrounding objects, gives to the wards a degree of heat which is suffocating. Between the beds are the night chairs which the unfortunate sick use when needed, and have only a curtain around them as a temporary protection.

There the excrement remains from six to twelve hours, spreading offensive exhalations throughout the ward, until they are removed by the Chinese; this is usually done at three o'clock in the afternoon and again at the same hour in the early morning.

These wards get light through large windows, but the air that enters through them is that of the street, always mephitic and hurtful.

Toward the southern part is found the convalescent ward, a real furnace, in which the low ceiling and the absence of fresh, pure air and light render existence almost impossible.

In the military hospital of Havana there is no privy nor other accommodation of the kind; the excrements are thrown into the open drain of the arsenal.

In the military hospital of Havana are mingled indiscriminately, in all the medical wards, the patients having yellow-fever, typhoid-fever, and other infectious and contagious diseases, with those admitted for all other diseases which are not contagious.

There it is a certain and unfailing rule that the soldier who has never had yellow-fever, if he is brought to the hospital for any other cause, always contracts the endemic disease.

It is seen every day that a soldier who is brought in for a wound dies from yellow-fever contracted in this immense focus of the disease.

The separation of those with different diseases is materially impossible; those having surgical diseases are exposed necessarily to the contagion of yellow-fever and other contagious and infectious diseases that may be in the hospital.

The emanations that arise from the excrements spread throughout the wards and are diffused in great quantity through the air surrounding all the sick, and contributes greatly to depress them and to render death almost certain.

Disinfection is materially impossible in those wards, because they are so built that they could be used for any other purpose better than for the accommodation of the sick; their many sharp angles and open ceilings make infection very easy and permanent and scientific disinfection impossible.

Everything about this building conspires against the health of the unfortunate soldier; its location, the direction in

which it faces, its internal arrangement, its want of light and air, its great age, everything demands that it be torn down as the focus of every species of infectious disease.

The mortality of the soldiers, which has been recorded in the statistics, is not due to the climate, but to this source of reproach which is called a military hospital.

No pen can describe what happens there to the unfortunate patients. In whatever direction the eye is turned only sorrow and misery are seen; it would seem as if at any time might be seen rising from these ruins the spectres of thousands of innocent victims.

The smell that arises from the damp dungeons, the uncertain light that enters through the narrow openings, the air saturated with poisonous miasmas—all, all there is the portent of certain death to those shut up in it.

When we enter the wards of the insane it seems to us as if there flashes through the whole body a deadly chill. On more than one occasion we felt as if we ought not to continue our advance.

There is a large hall, in which cages like those intended for wild beasts are built, so as to leave behind them a corridor which measures hardly a metre in breadth. In each cage is a poor insane person extended on a low bed; . . . the air which reaches them is that arising from the drain into which the excrements of the sick are thrown, and the little light comes from the south. What a horrible sight! What a shame!

The result is that all the press of Cuba protests against such an outrage.

The judgment of humanity requires, demands that this building be removed, and that another be constructed in a suitable place having suitable accommodations for the proper care of sick soldiers. This hospital is a menace to the health of the city and a disgrace to the government, which claims to be civilized and enlightened.*

* And there is even more than has been stated. In this hospital, which is in such bad condition, in this terrible focus of infection, there was formerly, and there may be still, store-rooms on the lower floor in which were kept on deposit the material for the beds, as blankets, sheets, mattresses, etc., which are distributed to the other military hospitals on the island. This fact is mentioned in a report made by the Mixed Commission which was charged, in 1878, by the Government to make a study of yellow-fever in Cuba.—A. F. C.

II.

Another statement, made by the *Cronica Medico-Quirurgica de la Habana*, gives additional facts. The occasion of these publications was the report of a municipal sanitary convention regarding the condition of the hospital of San Ambrosio, which is the name of the hospital above described.

Among the benefits which a wise and provident government ought to confer on a country, the first and most important is public health, which includes the hygiene of immigration, and embraced in this is the best means of saving the lives of all who come to add to the population of the country, and to contribute to the prosperity of the people in general, of no less importance is the protection of the recruits who are, unfortunately, dragged from their homes by law to render to the State the most important of all services—military service.

In an article published in the third volume of the *Cronica Medico-Quirurgica* the necessity for erecting a new military hospital capable of accommodating a thousand patients was shown, and it was shown that it should have all the conditions required by modern scientific progress. We recognized then, as we recognize to-day, seventeen years later, the necessity of locating it beyond the limits of the city, and, what is more, we have been agreeably surprised on finding that we agree with all others interested as to the situation best adapted for the purpose, which is that on the north side of the Castillo del Principe.

Indeed, this is the most suitable location for the hospital; and there are in it already the civil hospital of Our Lady of Mercy, and it is proposed to erect there one for children in the neighborhood of the Merced, and, besides, the ground is marked out for the new school of medicine.

This circumstance will facilitate the solution of the most important of the problems presented regarding the erection and location of a hospital—the removal of the excreta in a safe and proper manner. It is known that the civil hospital of N. S. de las Mercedes has succeeded in overcoming this difficulty by constructing a vault or cesspool which requires small-sized drain pipes instead of the expensive sewer which it was proposed to extend to the seashore. In the new hospital the same system can be adopted by the sanitary authori-

ties. Besides, the supply of an abundance of water from the Canal de Albear will have the same effect that the Piratecnia, a military establishment situated on the top of the same hill, has now.

Dr. La Plata asked for, as a provisional means, the construction of a temporary wooden building, citing in its favor the good results obtained from the barrack constructed of the same material in the Paseo de Tacon, and used as a hospital for many years with excellent results. We ask for it because of the little cost which it requires, and because it conforms more than any other to the requirements of hygiene.

A number of barracks capable of accommodating five hundred sick, in separate tents, having about twenty beds each at the most, might be erected for about $50,000 in gold, and if they would last, on an average, about thirty years, they would have accomplished the object for which they were intended, at a very moderate cost.

In our country, exempt from severe winters, the barrack would be amply sufficient, if it be well constructed, for a defence against the heavy rains, and if proper hygiene is secured and the removal of the excreta be perfect, and an abundant supply of water for cleanliness be supplied, as well as a sufficient quantity of chemically pure drinking water be furnished.

We propose to make only three statements :

1. The military hospital now in existence is an outrage against the principles of hygiene and against patriotism.

2. That a new hospital should be built at the elevation of the Castillo del Principe.

3. That the erection of barracks or wooden structures, the cost of which should not exceed 60,000 pesos, would be sufficient to accommodate the great number of sick usually treated in the hospital of San Ambrosio.—*Translated for* THE SANITARIAN *by* T. P. CORBALLY, A.M., M.D.

EXPEDITING THE CURRENT IN MEXICAN SEWERS.—A new project for the sanitation of the sewers in the City of Mexico, at a cost of about $25,000, calls for the building of some twenty-five windmills in different parts of the city to rotate paddle-wheels in the sewers and quicken the current to 1 metre per second.—*El Universal.*

MORTALITY AND MORBILITY STATISTICS.

By HARRY KENT BELL, M.D.

ALABAMA.—Jerome Cochrane, M.D., State Health Officer, Montgomery.

Mobile, 31,076: T. S. Scales, M.D., Health Officer, reports for the month of August a mortality of 63, of which 38 were colored, and 9 were under five years of age. The annual death-rate per 1000 was 24.24.

Zymotic diseases caused 9 deaths, and consumption, 12.

ARKANSAS.—John I. Hancock, M.D., President, Argentina; D. W. Holman, Secretary, Little Rock.

CALIFORNIA.—C. W. Nutting, M.D., President, Etna Mills; J. R. Laine, M.D., Secretary, Sacramento.

For the month of August the reports from 75 cities, towns, villages, and sanitary districts, aggregating a population of 777,053, show a mortality of 992—a death-rate of 15.24 per 1000 per annum.

There were 163 deaths from consumption, 41 from pneumonia, 26 from bronchitis, 5 from congestion of the lungs, 133 from diseases of the stomach and bowels, 16 from diphtheria and croup, 1 from scarlatina, 6 from whooping-cough, 33 from typhoid-fever, and 1 from *la grippe*.

Reports of prevailing diseases from 48 localities, outside of the larger towns and cities, give 8 cases of pneumonia, 44 of bronchitis, 20 of pleurisy, 9 of congestion of the lungs, 212 of diarrhœa, 44 of dysentery, 48 of cholera morbus, 51 of cholera infantum, 10 of diphtheria and croup, 3 of scarlatina, 22 of measles, 101 of whooping-cough, 36 of *la grippe*, 62 of typhoid-fever, 433 of malarial fevers, 11 of cerebro-spinal-fever, 11 of erysipelas, 65 of rheumatism, 58 of neuralgia, 58 of tonsilitis, and 38 of pharyngitis.

The Thirteenth Biennial Report for the two years, June 30th, 1892, to June 30th, 1894, is at hand. The Secretary's

report of mortality for the first year shows that the total number of deaths from all causes was 13,166 in an estimated population of 1,250,000, representing a death-rate of 10.53 per 1000. Small-pox caused 8 deaths; measles, 48; scarlatina, 178; diphtheria, 192; croup, 86; influenza, 50; typhoid-fever, 322; cerebro-spinal-fever, 71; consumption, 2032; pneumonia, 979; pleurisy, 38; bronchitis, 356; other respiratory diseases, 246.

During the second year there were 11,349 deaths, representing a death-rate of 9.71 per 1000. Small-pox was the cause of one death only; measles, 4; scarlatina, 23; diphtheria, 155; croup, 62; influenza, 103; typhoid-fever, 295; cerebro-spinal-fever, 57; consumption, 1789; pneumonia, 889; pleurisy, 31; bronchitis, 342; other respiratory diseases, 221.

The following valuable contributions are included in the report: "Tests for Impurities in Drinking Water," by W. Anderson, M.D.; "A Study of Water in Health and Disease," by G. M. Kober, M.D.; Address by the President, C. A. Ruggles, M.D.; "Sewage Irrigation," by H. S. Orme, M.D.; "Contagious Diseases, and their Suppression by Legal Measures," by G. Childs-McDonald, M.D.; "The Ultimate Disposal of Sewage," by J. H. Stollard, M.D.; "Modern Cremation," by A. Regensburger, M.D.; "Sanitation of Dwellings, Public Buildings, and Thoroughfares," by J. H. Davisson, M.D.; "Indio, the Colorado Desert for Health," by W. Lindley, M.D.; "Ravages of the Bacillus Anthracis," by C. L. Bard, M.D.; "Sanitary Legislation," by H. A. Spencer, V.S.; "Glanders," by C. B. Orvis, D.V.S.; "Sanitation," by W. W. Oates; "Tuberculosis," by W. F. Wiard, M.D.; "The Sanitary Control of Tuberculosis," by S. S. Herrick, M.D.; "Cremation as the only Sanitary Method of Disposing of the Dead," by W. F. McNutt, M.D.; "Prevention of Contagious and Infectious Diseases, with Special Reference to Tuberculosis," by W. Anderson, M.D.; "A Plea for the Prevention of Tuberculosis," by G. M. Kober, M.D.; "The Relation between Bovine and Human Tuberculosis," by R. A. Archibald, D.V.S.

COLORADO.—A. Stedman, M.D., President, Denver; Henry Sewell, M.D., Secretary, Denver.

CONNECTICUT.—Professor William H. Brewer, Ph.D., New Haven, President; Professor C. A. Lindsley, M.D., Secretary, New Haven.

The mortality report for August has been received from 166 towns in the State. There were 1297 deaths reported in the State during the month in a population of 810,343. This was 100 less than in July, and 137 less than in August, 1893, and 18 less than the average number of deaths in August for the five years preceding the present. The death-rate was 19.3 for the large towns; 19.1 for the small towns, and 19.2 for the whole State. The deaths from zymotic diseases were 472, being 36.3 per cent of the total mortality. There were 107 deaths from consumption.

DELAWARE.—E. W. Cooper, M.D., President, Camden; E. B. Frazer, Secretary, Wilmington.

Wilmington.—At a meeting of the East Washington Citizens' Association, October 2d, General Yoder submitted a report upon the subject of municipal sanitation, with special reference to the disposal of garbage.

The report said:

"It is a well-known fact that all forms of filth, night soil, garbage, and the accumulation of the necessary household dirt, negligence on the part of the Health Department, and the failure to remove the same and properly dispose of it, propagates more contagious and infectious diseases than all other known causes, because these places of dirt afford nidus for the incubation, growth, and dissemination of the ptomaines and poisonous germs, which, when they enter the system, produce the specific, infectious, and contagious diseases. Then, if germs produce disease, we must destroy the germs to prevent disease—not transport, bury, or reduce them."

For the disposal of garbage cremation was urged as the only thoroughly effective and safe means.

J. W. Clarke, the former garbage contractor, and Dr. Hubbell spoke in favor of reduction plants; but action on the report was deferred to another meeting.

DISTRICT OF COLUMBIA, 250,000: W. C. Woodward, M.D., Health Officer.

Mortality report for the five weeks ending September 29th, 500, of which number 190 were of colored people, and 183 were under five years of age. The annual death-rate was 17.6 per 1000. There were 138 deaths from zymotic diseases, and 39 from consumption.

FLORIDA.—Hon. W. B. Henderson, President, Tampa; Joseph Y. Porter, M.D., Secretary, Jacksonville.

The summary, as published in *Florida Health Notes* for the month of July, is as follows:

Number of counties reporting, 45; number of cities reporting, 3; total population of said counties and cities, 391,422; number of births reported, 511; number of marriages reported, 307; number of deaths reported, 329; birth-rate per 1000 per annum, 15.66; death-rate per 1000 per annum, 10.08; average age of decedents, 26.93; number of deaths under five years of age, 116. Deaths from zymotic diseases numbered 71, and from consumption, 35.

ILLINOIS.—William E. Quine, M.D., President, Chicago; J. W. Scott, Secretary, Springfield.

Chicago, 1,600,000: A. R. Reynolds, M.D., Commissioner. The mortality for the month of August amounted to 2252, of which 1232 were of children under five years of age.

The annual death-rate was 16.89 per 1000.

From zymotic diseases there were 1364 deaths, of which 974 were due to diarrhœal diseases of infants. Consumption caused 185 deaths.

INDIANA.—S. S. Boots, M.D., President, Greenfield; C. N. Metcalf, M.D., Secretary, Indianapolis.

IOWA.—Frederick Becker, M.D., President, Claremont; J. F. Kennedy, M.D., Secretary, Des Moines.

The *Monthly Bulletin* reports for the month of August:

Cedar Rapids, 25,000: Mortality, 12. Annual death-rate per 1000, 5.28.

Clinton, 22,000: Mortality, 23. Annual death-rate per 1000, 13.2.

Dubuque, 40,000: Mortality, 44. Annual death-rate per 1000, 16.8.

Ottumwa, 17,000: Mortality, 15. Annual death-rate per 1000, 10.56.

KANSAS.—J. P. Stewart, M.D., President, Clay Centre; H. A. Dykes, M.D., Secretary, Topeka.

KENTUCKY.—Joseph M. Matthews, M.D., President, Louisville; J. N. McCormack, M.D., Secretary, Bowling Green.

LOUISIANA.—S. R. Oliphant, President, New Orleans; W. R. Harnan, M.D., Secretary, New Orleans.

New Orleans, 254,000—184,500 white, 69,500 colored. There were reported for four weeks ending September 8th, 446 deaths, of which number 150 were among the colored people, and 128 of children under five years of age. There were 74 deaths due to zymotic diseases, and 68 to consumption. The annual death-rate was 22.80 per 1000.

Referring to the excessive mortality of the negroes in New Orleans—it is at least double that among the whites—the *Times-Democrat* of that city says: "The most important missionary work that can be done and ought to be done in the South is in the sanitation of the negro districts in the big cities like New Orleans. Some $40,000,000 have been given toward the education of the colored race since the war, and twenty-odd colleges endowed for their benefit. It would have been far better for the negroes had a portion of the money gone to establish their comfort, health, and longer life, for there is little wisdom in teaching the negro youth and allowing them to be carried off each year, as they are, by the thousands, by diseases easily preventable or curable." Probably less than half the negroes in the city receive any medical attendance during illness, which is brought to public attention only by the doctor's certificate of death. The result is that the average life of the New Orleans negro has been reduced to 24.2 years. It may be that the physician is not needed more than vigilance on the part of the Board of Health, for it is admitted that the negro's sanitary surroundings are of a nature to make him an easy prey to disease. The houses in the negro quarter are filthy, ill-drained, and exposed to wind and weather. In many cases they should be condemned and torn

down. New Orleans is probably well able to take care of the problem of negro mortality if the authorities would set about it in the right way.

MAINE.—C. D. Smith, M.D., President, Portland; A. G. Young, M.D., Secretary, Augusta.

Biddeford.—A committee of the Board of Trade having been appointed to investigate the sanitary condition of the city, at a meeting of the committee, October 9th, John S. Fogg, M.D., City Physician, submitted a report, from which we abstract as follows:

"The total number of deaths which occurred in this city in 1893 was 349; of these 74 were of zymotic origin.

"Adopting the same classification as in 1892, the following list will give the number of deaths from each disease:

"Cholera infantum, 38; scarlet-fever, 14; diarrhœa, 9; typhoid-fever, 4; dysentery, 4; measles, 3; diphtheria, 1; cholera morbus, 1: 74.

"Comparing the above with the death-rate of 1892, it is seen that there were 5 less deaths from cholera infantum in 1893 than in 1892. There were no deaths from membranous croup in 1893, against 18 deaths from this disease in 1892. There were only 4 deaths from typhoid-fever in 1893, against 18 in 1892. There were no deaths from whooping-cough in 1893, against 15 in 1892. There were 9 cases of diarrhœa in 1893, against 10 in 1892. Two deaths from diphtheria in 1893, against 1 in 1892. There was 1 death from cholera morbus in each year. There were no deaths from scarlet-fever or measles in 1892, but in 1893 there were 14 deaths from scarlet-fever and 3 from measles."

MARYLAND.—John Morris, M.D., President, Baltimore; James A. Steuart, M.D., Secretary, Baltimore.

The Secretary's report for September shows that with the exception of the sickness resulting from the long summer drought and consequent bad water, the general health has been good in all parts of the State. This is a matter for sincere congratulation, and the results attained are due in no small degree to a better appreciation of the importance of good methods of sanitation. Local boards have been formed

in nearly all the cities and towns in the State. These have been active in securing the abatement of nuisances and in aiding the State Board by promptly reporting epidemics and in tracing out their causes. A meeting of the Sanitary League will be held here November 1st, and will bring together all the health officers of the State. The conference should increase the interest in this very important subject.

Baltimore, 455,427: James F. McShane, M.D., Commissioner, reports for August that the total deaths were 784—a decrease of 52, compared with the corresponding month of August, 1893. Of these 613 were whites and 171 colored—a death-rate of 19.15 per 1000 for the former and 28.90 per 1000 for the latter. The death-rate per 1000 for the whole population was 20.67. Seventy-eight died from infectious diseases, 80 from consumption, 24 from pneumonia, 10 from bronchitis, 70 from cholera-infantum, 4 from cholera morbus, 18 from diarrhœa, 12 from dysentery, 18 from enterocolitis, 13 from enteritis, 24 from gastro-enteritis, and 39 from typhoid. Three hundred and fifty-seven, or 45.53 per cent of the total deaths, were in children under five years of age. During the month 152 cases of infectious diseases were reported, an increase of 26 compared with the preceding month.

The deaths during the year 1893 were 9554, being 20.99 per 1000 in a population of 455,427.

The deaths from zymotic diseases numbered 1548, and from consumption, 1099. Deaths of children under five years of age numbered 3604.

MASSACHUSETTS.—H. P. Walcott, M.D., Chairman, Cambridge; S. W. Abbott, M.D., Secretary, Boston.

Boston, 501,107: S. H. Durgin, M.D., Chairman, reports for the month of July 1150 deaths, of which number 541 were under five years of age.

The annual death-rate was 27.53 per 1000. From zymotic diseases there were 368 deaths, of which 251 were due to cholera infantum, and from consumption, 111.

MICHIGAN.—Hon. Frank Wells, President, Lansing; Henry B. Baker, M.D., Secretary, Lansing.

For the month of September, 1894, compared with the pre-

ceding month, the prevailing direction of the wind was south (instead of southwest); the velocity was 1.8 miles per hour greater, the temperature was 3.63° lower, the rainfall at Lansing was 2.76 inches more, the absolute humidity was slightly more, the relative humidity was more, the day ozone was less, the night ozone was more, and the depth of water in the well at Lansing was three inches less.

For the month of September, compared with the preceding month, typhoid-fever and influenza increased in area of prevalence.

Compared with the average for corresponding months in the eight years 1886–93, the prevailing direction of the wind was south (instead of southwest), the velocity was 0.6 of a mile per hour more, the temperature was 3.59° higher, the rainfall at Lansing was .16 of an inch less, the absolute humidity was more, the relative humidity was slightly less, the day and night ozone were more, and the depth of water in the well at Lansing was four inches less in September, 1894.

Compared with the average for corresponding months in the eight years 1886-93, typho-malarial-fever, intermittent-fever, remittent-fever, and erysipelas were less prevalent, and typhoid-fever and scarlet-fever were more prevalent in September, 1894.

Including reports by regular observers and others, consumption was reported present in Michigan in the month of September, 1894, at two hundred and thirty-six places; typhoid-fever at one hundred and twenty-one places; scarlet-fever at seventy-three places; diphtheria at sixty-one places; measles at six places, and small-pox at two places.

Reports from all sources show typhoid-fever reported at thirty-nine places more; diphtheria at ten places more; consumption at two places more; measles at eleven places less, and small-pox at one place less than in the preceding month; scarlet-fever was reported at the same number of places as in the month of August.

September 27.—The Supreme Court to-day decided the case of the State Board of Health against the St. Paul, Minneapolis and "Soo" Railway. The board attempted to enforce the law relative to the inspection of immigrants and baggage, and the railway refused to observe the law on the ground

that it was unconstitutional, and that the board had exceeded its authority. The Supreme Court, in a long opinion, sustains the position of the railroad and affirms the decision of the lower court. It is a bad blow to the Board of Health in its efforts to prevent the entrance of disease over the border lines.

Detroit, 215,000: Mortality report for the month of September, 346. Deaths of children under five years, 167. Prevailing causes of death: cholera infantum, 67; diphtheria, 14; phthisis pulmonalis and tuberculosis, 30; pneumonia, 15. Death-rate, 15.34.

MINNESOTA.—Franklin Staples, M.D., President, Winona; C. N. Hewitt, M.D., Secretary, Red Wing.

Minneapolis, 223,700: E. S. Kelley, M.D., Commissioner, reports for August 200 deaths, of which number 73 were under five years of age. The annual death-rate per 1000 was 8.94. From zymotic diseases there were 69 deaths, and from consumption, 23.

St. Paul, 155,000: H. F. Hoyt, Commissioner. The mortality for August was 149, of which 77 were of children under five years of age. The annual death-rate was 11.53 per 1000. Zymotic diseases caused 132 deaths, and consumption, 8.

MISSISSIPPI.—W. F. Hyer, M.D., President, Meriden; Wirt Johnson, M.D., Secretary, Jackson.

MISSOURI.—F. J. Lutz, M.D., President, St. Louis; William P. King, M.D., Secretary, Kansas City.

Kansas City.—Mortality report for the month of September, 131—under five years of age, 40. Prevailing causes: from diphtheria, 6; fever, malarial and remittent, 8; hydrophobia (?) 14; phthisis pulmonalis and tuberculosis, 7. Death-rate, 10.48.

NEBRASKA.—J. V. Beghtol, M.D., President, Friend; F. D. Haldeman, M.D., Secretary, Ord.

NEVADA.—S. L. Lee, M.D., President, Carson City; J. A. Lewis, M.D., Secretary, Reno.

NEW HAMPSHIRE.—G. P. Conn, M.D., President, Concord; Irving A. Watson, M.D., Secretary, Concord.

NEW JERSEY.—C. F. Brackett, M.D., President, Princeton; Henry Mitchell, M.D., Secretary, Asbury Park.

Trenton.—Diphtheria in the city is to be investigated by the Board of Health. A committee for such purpose was appointed at the meeting of the board, October 2d. The committee appointed by President Vroom is Inspector Mickel, Medical Inspector Shepherd, and Dr. Cantwell. In making his monthly report Inspector Mickel spoke of his investigations of the disease of the forty-six cases reported by physicians. Thirty-one were in one locality, in Chambersburg. He found that there was no need of closing the Centennial School, as he believed the danger of contagion to the pupils was no greater than it would be on the street. The inspector said that if all the physicians promptly reported the cases, and that disinfection was properly applied, there ought to be very little danger of the disease spreading. He said that to a large degree old cesspools were responsible for the trouble, and that he had ordered a large number of sewer connections.

Collingwood.—Diphtheria has prevailed for several weeks and continues unabated. Grave danger continues to exist and occasions much alarm, more particularly as the authorities have not as yet arrived at any satisfactory cause for the prevalence of the plague. At a special meeting of the Board of Health, October 2d, it was decided that every house in which a case of diphtheria existed should be rigidly quarantined, and all access to or egress from such houses prevented, except under such conditions as are entirely compatible with public safety. The schools will continue closed until further notice.

Camden is also threatened with the scourge of diphtheria, and it is likely to tax all the resources of the Board of Health. A few cases, which were at first widely separated and no effort made to isolate them, have spread the contagion to such an extent that people are fearing that it may become epidemic in both the northern and southern sections of the city. It is considered that it may be necessary to close the public schools.

NEW YORK.—F. O. Donohue, M.D., President, Syracuse; J. S. Barnes, M.D., Secretary, Albany.

The month August was an unusually healthy one, with a reported mortality lower than that reported in the corre-

sponding month for the past five years, being lower than that of August, 1893, by 700; there were 2000 fewer deaths than were reported in July. The infant mortality was less than the average, and the zymotic mortality was lower than that of August, 1893, by 300 deaths. From diarrhœal diseases there have not been so few deaths in August for several years, and from the number reported in July there was a diminution of 1200. This decrease has been chiefly in the large cities, in New York there having been hardly one fourth the diarrhœal mortality that was reported in July; a large decrease from July in deaths from this cause is, however, customary. From other zymotic diseases, taken together, there were slightly fewer deaths than occurred in July. Typhoid-fever shows the customary increase which always begins in August, the deaths being about double those of the preceding month; the increase is distributed through all parts of the State, but most marked in the Hudson Valley District. From whooping-cough there is also an increased mortality; the observation of ten years shows that it has a larger mortality in August than in any other month, and it is the same now as a year ago. From diphtheria the decrease in mortality continues, there having been nearly 100 fewer deaths than in July, but it is still excessive for the season. Scarlet-fever caused but 48 deaths. There were but 6 deaths from small-pox: 4 in New York and 1 each in Port Jervis and Newburgh; a case has developed in Nelsonville, Putnam County, originating in Newark, N. J. From consumption there were the usual number of deaths. During the month the rainfall was slight, being 2.24 inches less than the average and 1.30 less than in July; the relative humidity was less and the mean dew-point lower; the prevailing wind was southerly, with low velocity.

New York, 1,925,562: Total deaths, 3324—1559 under five years. Death-rate, 20.40. Zymotic diseases per 1000 deaths from all causes, 257.50. Deaths from consumption, 381.

The antitoxine treatment of diphtheria, based upon the facts eliminated by the report of Hermann Biggs, M.D., Pathologist and Director of the Bacteriological Laboratory, and first introduced by the Health Department of New York two months ago, is being vigorously prosecuted by the department, and thus far with the happiest results. It is deservedly attracting

consideration by sanitary authorities everywhere, but it should not divert attention from preventive measures.

Brooklyn, 1,012,200: Total deaths, 1911—971 under five years. Death-rate, 22.40. Zymotic diseases per 1000 deaths from all causes, 286.30. Deaths from consumption, 188.

Syracuse, 91,944: Total deaths, 157-79 under five years. Death-rate, 20.50. Zymotic diseases per 1000 deaths from all causes, 32.0. From consumption, 20.

Albany, 98,000: Total deaths, 160—84 under five years. Death-rate, 19.52. Zymotic diseases per 1000 deaths from all causes, 268.75. From consumption, 16.

At the semi-annual meeting of the Albany Medical Society, October 9th, Dr. O. D. Ball, President of the Society, took occasion to say:

"There are employed in the Public Health Department of this city eight physicians with combined salaries of $5400, besides one physician each for the Police and Fire departments. These, as I understand, are all independent positions, and, so far as I know, make no reports as to what work they do if any, are under no discipline, and are accountable to the appointing power and to it only, except the Health Officer, who reports to the Board of Health.

"It seems to me that a properly qualified health officer, such as we now have, and three assistants, one of whom should be a bacteriologist, and all under the direction and control of the Health Officer, would do all the work now performed by the ten men now employed, in a much more satisfactory manner, both to those who require their services and to the city which employs them. There is, however, no reason why we should pay the city's legal adviser $6000, and its medical adviser, who spends equally as much of his time, only $1800.

"Another question which has for the last twenty or more years severely agitated the minds of the citizens of this city is the question of the water supply. What I say on this subject is applicable to the whole of our county, for over two thirds of the population of the county of Albany receive their water supply from the open sewer or its tributary. It is an incontrovertible fact that we have more typhoid-fever and diarrhœal diseases here than we ought in comparison to other towns

less unhappily situated. We can, I think, say with absolute certainty that our excess of these diseases is due to our receiving their specific germs through our impure water supply, for it has been estimated, as nearly as such subjects ever can be estimated, that if we can prevent the specific microbe of a specific disease from entering the body that disease can never originate. It is, then, of some importance that we, as medical men who teach and believe this truth, use every endeavor to see this principle carried out to its logical conclusion. How, then, can we accomplish this end?"

He then earnestly advocated the filtering of the water before using it.

He next referred to the State law making it obligatory for children of certain age to attend the public schools. He recommended that a committee on hygiene be appointed to investigate the school buildings throughout the county and report at the annual meeting. There can scarcely be a doubt that some of the buildings are improperly heated or ventilated, and very likely overcrowded also.

Buffalo, 300,000: Total deaths, 550—462 under five years. Death-rate, 23.00. Zymotic diseases per 1000 deaths from all causes, 480.30. From consumption, 20.

Rochester, 150,000: Total deaths, 225—101 under five years. Death-rate, 18.00. Zymotic diseases per 1000 deaths from all causes, 324.45. From consumption, 21.

NORTH CAROLINA.—H. T. Bahnson, M.D., President, Salem; Richard H. Lewis, M.D., Secretary, Raleigh.

From the *Bulletin* of the State Board of Health we find that during August there were 187 deaths in 30 towns, aggregating 146,654 population; 94 were of colored people, and 42 were of children under five years of age.

The annual death-rates were 12.9 per 1000 for the white population, 18.8 for the colored population, and 15.3 for the total. There were 19 deaths from consumption, 17 from typhoid-fever, 2 from pneumonia, and 34 from diarrhœal diseases.

Asheville, 12,000: Total deaths, 13. Annual death-rate, 13.0 per 1000.

Charlotte, 14,000: Total deaths, 24. Annual death-rate, 20.6 per 1000.

Raleigh, 15,000: Total deaths, 22. Annual death-rate, 17.6 per 1000.

Wilmington, 22,000: Total deaths, 30. Annual death-rate, 16.6 per 1000.

NORTH DAKOTA.—Hon. W. H. Standish, President, Bismarck; F. H. DeVaux, M.D., Superintendent, Valley City.

OHIO.—Byron Stanton, M.D., President, Cincinnati; C. O. Probst, M.D., Secretary, Columbus.

Cincinnati, 325,000: J. W. Prendergast, M.D., Health Officer, reports for August a mortality of 514, of which 209 were under five years of age, representing an annual death-rate of 18.97 per 1000. There were 111 deaths from zymotic diseases, and 50 from consumption.

During the year 1893 there were 6092 deaths, being 18.74 per 1000 in an estimated population of 325,000. The deaths under five years of age numbered 2146. Zymotic diseases caused 1190 deaths, and consumption, 744. *Diphtheria* is raging near Stovertown, O., and the residents are in great dread of its spread. Thirty houses have been quarantined, and the schools of the township have all been closed.

OKLAHOMA TERRITORY.—L. L. Parker, President, Kingfisher; C. D. Arnold, M.D., Secretary, El Rino.

PENNSYLVANIA.—S. T. Davis, M.D., President, Lancaster; Benjamin Lee, M.D., Secretary, Philadelphia.

Philadelphia, 1,139,457: M. Veale, Health Officer, reports: In the five weeks ending September 29th there were 1857 deaths, of which number 727 were under five years of age. Annual death-rate, 16.9 per 1000. Deaths from consumption numbered 224, and from zymotic diseases 263, of which 133 were due to cholera infantum.

The Board of Education has decided to make the vaccination of school children compulsory, and to bar out those whose parents refuse compliance.

Pittsburg, 264,000: J. Guy McCandless, M.D., Registrar, reports: During the five weeks ending September 29th there were 480 deaths, of which 218 were under five years of age.

Annual death-rate, 18.35 per 1000. Zymotic diseases caused 90 deaths, and consumption, 46.

The annual report for the year 1893 shows that the total mortality amounted to 5902, representing a death-rate of 22.36 per 1000 in an estimated population of 264,000. There were 2870 deaths among children under five years of age. There were 3960 cases of infectious diseases reported with 1033 deaths, being 17.5 per cent of the total mortality. Consumption caused 449 deaths, being 7.6 per cent of the total mortality.

RHODE ISLAND.—A. G. Sprague, M.D., President, River Point; Gardner T. Swarts, Secretary, Providence.

Recent inquiries made by the State Board of Health regarding the presence of tuberculosis among the cattle of Rhode Island, and its subsequent efforts to stamp out the disease wherever found, have been productive of excellent results, but it should not be thought that the work is complete yet, or that tuberculosis is the only malady affecting animals with which the authorities are obliged to contend. The New York *Independent*, in a recent issue, notes that "in the State of Rhode Island a vigorous struggle has been made by the Health Board to prevent the sale of glandered horses, and only those who realize the brutal selfishness of unscrupulous men when their money interests are attacked can imagine the organized opposition it met, though righteousness triumphed in the end." This calls attention to a dangerous form of disease from which the most serious effects may arise. It is said that an animal may have the malady for months and continue spreading it all the time, and meanwhile the fact be unsuspected that any danger exists to human beings. The *Independent* relates an incident of a horse afflicted with glanders, which sneezed in a woman's face, the result being that in two weeks she died of the disease. It is well known that it is communicable to man, and for that reason every precaution against contagion should be taken when it is discovered.

SOUTH CAROLINA.—J. R. Bratton, M.D., Chairman, Yorkville; H. D. Fraser, M.D., Secretary, Charleston.

SOUTH DAKOTA.—C. B. Alford, M.D., President, Huron.

TENNESSEE.—J. D. Plunkett, M.D., President, Nashville; J. Berrien Lindsley, M.D., Secretary, Nashville.

The principal diseases, named in the order of their greater prevalence, in the State for the month of August were typhoid-fever, malarial-fever, dysentery, lung diseases acute, consumption, diphtheria, whooping-cough, scarlatina, diarrhœa, and rheumatism.

Chattanooga, 40,000: Total deaths, 43—colored, 25. Annual death-rates per 1000, white, 6.22; colored, 18.46: total, 10.20.

Knoxville, 40,385: Total deaths, 62—colored, 28. Annual death-rates per 1000, white, 88.00; colored, 23.07: total, 12.90.

Memphis, 57,951: Total deaths, 127—colored, 72. Annual death-rates per 1000, white, 18.15; colored, 34.72: total, 25.46.

Nashville, 87,754: Total deaths, 134—colored, 72. Annual death-rates per 1000, white, 13.62; colored, 26.04: total, 18.31.

TEXAS.—R. M. Swearingen, M.D., State Health Officer, Austin.

UTAH TERRITORY.

Salt Lake City.—Theodore B. Beatty, M.D., Health Commissioner.

During the month of August one death resulted from typhoid-fever, and during September the number was increased by nine, making a total of eleven for the two months, as compared with the same number for August and September of 1893. Dr. Beatty attributes the increase in deaths from the disease in September to the rains during the month, which, according to the accepted theory, causes the soil water to rise and throw off the typhoid bacteria derived from the seepage from vaults and outside closets. These germs of disease find their way into milk kept in cellars, and through additional sources reach the alimentary canals of human beings. With the abandonment of the present closet system and the

destruction of all refuse from typhoid patients the disease would be entirely wiped out, says the doctor.

VERMONT.—C. S. Caverly, M.D., President, Rutland; J. H. Hamilton, M.D., Secretary, Ritchford.

VIRGINIA.—R. W. Martin, M.D., President, Chatham; A. Irving, M.D., Secretary, Richmond.

WASHINGTON.—J. R. Hathaway, M.D., President, Everett; G. S. Armstrong, M.D., Secretary, Olympia.

WEST VIRGINIA.—W. P. Ewing, M.D., President, Charleston; N. D. Baker, M.D., Secretary, Martinsburg.

WISCONSIN.—Solon Marks, M.D., President, Milwaukee; U. O. B. Wingate, M.D., Secretary, Milwaukee.

MILWAUKEE, October 4, 1894.

Editor SANITARIAN:

I enclose herewith a copy of the recent findings of Judge Johnson, of the Circuit Court of this city, relative to some injunction cases which were very bitterly contested during the present outbreak of small-pox, and which kept us in court for several days, believing that it may be of enough interest to you to publish in THE SANITARIAN, for I think that the readers will be interested in it.

U. O. B. WINGATE, *Secretary.*

By the Court:

"In three cases that are pending in this court temporary injunctions have been obtained restraining the Health Commissioner of this city from removing the plaintiffs, who are said to be afflicted with small-pox, from their homes to the isolation hospital. In one of the cases, the case of August Rehwinkel and Emma Rehwinkel, his wife, against Walter Kempster, proofs and arguments have been laid before the court upon a motion to show cause why a perpetual injunction should not issue. By agreement of counsel it has been arranged that the proofs and arguments in that case should be used in the other cases, and that the other cases should abide the result of the motion for an injunction in that case.

" The complaint in the Rehwinkel case alleges that one of the plaintiffs, August Rehwinkel, has been declared sick of the small-pox. That the defendant, the Commissioner of Health in this city, as such Commissioner, threatens and intends to remove him to the isolation hospital. That the isolation hospital is not a fit or suitable place for the treatment of such diseases. That it is not well isolated itself, and that it would be a gross injury to August Rehwinkel, the plaintiff, to remove him forcibly to that place. There is no allegation of fraud, malice, partiality, or any other recognized ground for equitable interference. The allegations are simply these : That he is in danger of being removed, and that the place to which he is sought to be removed is not a suitable place, and is not as good a place as his own home. It also alleges that he has no family except his wife, that the house is easily isolated, and that he may be successfully and properly treated at his home without danger of the spread of contagion.

" The answer denies all the charges that are made against the isolation hospital, and proofs have been submitted with the answer, overwhelmingly rebutting and discrediting the statements which are made in the complaint as to the condition and management of that hospital.

" But it is claimed that, assuming that he was and is mistaken as to the condition of the hospital, there is a want of authority on the part of the Health Officer to make the threatened removal.

" The charter of this city provides for the appointment of a health officer, who shall exercise all the powers and duties of the old Board of Health prior to the creation of the office of Commissioner of Public Health. The charter further authorizes the city of Milwaukee, through its Common Council, to make all needful rules and regulations for the preservation of the health of the community. It also authorizes, in express terms, the Common Council to provide suitable means to prevent, among other things, the spread of contagious diseases in the city. Pursuant to that power the Common Council has passed an ordinance, which is in force, authorizing the Health Commissioner, in cases of small-pox and other like contagious diseases, at his discretion to remove patients to the isolation hospital in order to prevent the spread of con-

tagion. The authority contained in this ordinance to remove patients to the isolation hospital is not accompanied by any requirement that notice shall be given, or that the facts shall be judicially ascertained. And the validity of this ordinance is challenged as being an unreasonable exercise of municipal authority.

" There has been a considerable waste of learning in this case, in the exposition of rules and principles of law which are well known to all lawyers, and which it might have been presumed, without danger, were known to the court. There has also been a very wide field of investigation entered into as to the history and condition of the hospital, and as to the condition of affairs in this city relative to the existence and spread of the disease known as the small-pox.

" A court of equity has no power to interfere with the constituted authorities in the discharge of their duties, except upon certain well-defined and specific grounds. It must appear either that the proceeding threatened is utterly unauthorized and is entirely beyond the jurisdiction of the officers making the threat, or that the power is to be exercised maliciously, fraudulently, or in a gross spirit of oppression, or else a court of equity is powerless to interfere. It is not competent for a court of equity to look into even the question of jurisdiction, as the Circuit Court may do upon a writ of *certiorari*, unless it be shown that the proposed acts will result in some irreparable injury to the plaintiff—an injury for which he has no adequate and speedy remedy in the law.

" I shall not animadvert at all upon the facts outside of this particular case. Whatever my views may be, I am satisfied that the expression of them at this time and place would probably do more harm than good in the present condition of public sentiment, and that it is not only wisest, but imperative upon me that I should confine myself strictly to the case before me, and to the questions of law and fact which pertain to that case.

" The constitution of the State authorizes the Legislature to confer upon boards of supervisors and city councils and such like municipal bodies, such legislative, administrative, and executive functions as the Legislature in its wisdom may determine. The power conferred upon the Common Council

of this city by its charter, it is not seriously contended exceeds the power which may be, and ordinarily is, conferred upon such like municipal bodies. In the exercise of that power they have passed the ordinance in question. And the question which lays at the threshold of the inquiry is, whether or not that ordinance can be sustained as a valid exercise of municipal legislative authority. And we are not to forget that in the exercise of these delegated legislative functions, the city is limited to needful and suitable regulations, and may not make arbitrary, unreasonable, and tyrannical regulations, even under the general grant of power given to it by the charter. This ordinance has been challenged as being an unreasonable and oppressive ordinance. It is to be remembered that the ordinance was passed when there was no prevailing epidemic in the city. It was passed when there was no stress of public danger acting upon the Common Council. It was intended as a permanent municipal regulation; and now that the occasion seems to have arisen for the exercise of the powers therein conferred upon the Health Department, it is for the first time challenged as an unreasonable and oppressive ordinance. I cannot say, as a matter of law, that an ordinance which provides for the isolation of patients in the case of an epidemic, or in the case of contagious disease, is unreasonable or oppressive. The history of the world seems to be opposed to that idea. I cannot say, as a matter of law, that the isolation of such patients in a particular place designated by the ordinance is an unreasonable or oppressive exercise of municipal power. It is a mere exercise of the police functions of the State, delegated to the city, and it seems to me that it is too obvious for question that such a power ought to exist, to be exercised in proper cases; that it may be, and probably is impossible to isolate such diseases, otherwise than by sending the patients to some special place for treatment and isolation, in many cases. Of course the power should be exercised with discretion. Of course it should be exercised so as to create as little mischief and as little hardship as possible. But the ultimate right of the city to provide for such a power is the question before me; and I cannot say, as a matter of law, that the City Council has exceeded its powers in making this regulation.

" As to the alleged unfitness of the hospital for the reception of such patients, the proofs are overwhelmingly against the allegations in the complaint. Those allegations were undoubtedly made under a mistake of the facts. They do not seem to have been made by any person who had, or pretends to have, any personal knowledge of the condition of the hospital. They were probably made in good faith, and upon rumors which were supposed to be correct ; but the proofs before me dissipate those rumors utterly and overwhelmingly. And, I may add here, that if it be true that the isolation hospital is not so situated as to be a safe retreat for such patients, and as to protect the surrounding community from the danger of contagion, that is a grave and vital question for the Common Council, and one with which this court cannot deal.

" As to the general subject of the practicability of isolating cases of small-pox at the homes of the patients, the proof is overwhelming that in certain cases, and especially in the case before me upon which proofs have been taken, that is not so. The numerous affidavits by physicians, which have been submitted on the part of the plaintiffs upon that subject, fall far short of showing that in the present case, and in such cases, home isolation is practicable. Those affidavits are all to the effect that where a house is not contiguous to other houses, where the family is small, where the means of treatment and isolation are adequate, it is better to leave the patient at home than to remove him. This case does not come within the terms of any of these affidavits. Some of them are a little stronger, and some a little more conservative than that of Dr. Spearman, but taking his affidavit as an average specimen of the affidavits upon that side in the case, it comes far short of justifying the claim of the plaintiffs that the patient can be successfully isolated so as to prevent the spread of contagion in his case. The undisputed facts in relation to that case, if it were necessary, or proper, for the court to go into them, are that he lives in a small house, one of four small houses standing in a row, five or six feet apart ; that those houses depend upon a single well for their water supply ; that they have a sort of tenement privy consisting of a single building, being separated into compartments by partitions which do not extend to the roof ; that for drainage, they are dependent

upon a single slop-basin. And it seems to me that it would be, under ordinary circumstances, little less than an absurdity to say that those houses are so situated that isolation, so as to prevent the spread of contagion, is possible without the removal of the patient. The circumstances of the other cases are somewhat different, but not so far different as to justify, even in the opinion of counsel, a separate argument and separate trial in each case.

" I must, therefore, refuse the permanent injunction, and dissolve the preliminary injunction which is incorporated in the order to show cause, and leave to the Board of Health and to the Common Council the discharge of the duties which devolve upon them under the circumstances which we find surrounding us. As to the manner in which those duties should be exercised by such officials, I have nothing to say. Any fulmination upon that subject from the bench would be improper. As a private citizen, and off the bench, I am ready to give such aid and counsel as may reasonably be required of me ; but as judge of the Circuit Court I have no authority to make even a suggestion.

" I will state, further, that my opinion is that the determination of the Board of Health, unless it be malicious, partial, or made in ignorance of the true facts of the case, is final as against any proceeding in a court of equity ; that an injunction can only issue in the case of a clear abuse of the discretion conferred upon the Health Department, which the Supreme Court has declared to be a judicial discretion.

" The order to show cause is dismissed, and the preliminary injunction incorporated in the order is dissolved."

Milwaukee, 270,000 : W. Kempster, M.D., Commissioner, reports for August a mortality of 413, of which 246 were under five years of age. From zymotic diseases there were 253 deaths, and from consumption, 24. The annual death-rate per 1000 was 18.40.

During the year 1893 the whole number of deaths was 4462, representing a death-rate of 17.16 per 1000 in an estimated population of 260,000. Under the age of five years there were 2307 deaths.

There were 209 deaths from diphtheria, 94 from scarlatina,

95 from typhoid-fever, 1 from small-pox, and 365 from consumption.

PROVINCIAL BOARD OF HEALTH OF NEW BRUNSWICK.—William Bayard, M.D., Chairman, St. John; George E. Coulthard, M.D., Secretary, Fredericton.

PROVINCIAL BOARD OF HEALTH OF NOVA SCOTIA.—Hon. W. S. Fielding, Premier and Provincial Secretary, Chairman; A. P. Reid, M.D., Secretary, Halifax.

PROVINCIAL BOARD OF HEALTH OF ONTARIO.—John Duff Macdonald, M.D., Chairman, Hamilton; Peter H. Bryce, M.D., Secretary, Toronto.

Ottawa.—Diphtheria is reported to be prevalent all over the city. One of the public schools is closed up, and the others, it is said, will soon be. This is said to be due to bad drainage.

PROVINCIAL BOARD OF HEALTH OF QUEBEC.—E. P. Lachapelle, M.D., President, Montreal; Elzear Pelletier, M.D., Secretary, Montreal.

Drummondsville.—The danger of disease germs in books has led to a discussion of the subject by the School Committee. F. C. Pettigrove, President of the Committee, considered it the most important care to see to the health of the school children. We have always considered it so, and have always given the matter our closest attention. There is nothing else that I consider half as important. Great economy is practised in the distribution of books to the children, and some of the books given out are very dirty. Now, if the Board of Health is satisfied that in these soiled books the germs of disease are spread, there should be some action taken at once. We have had less money to spend every year for several years, and have had a big slice taken from our appropriation this year, which is the cause of a great deal of our economy in the distribution of books and other matters.

MANITOBA.—John H. O'Donnell, M.D., Chairman, Winnipeg; C. J. Jamison, M.D., Secretary, Winnipeg.

Winnipeg.—Typhoid-fever is prevailing extensively, attributed to foul well-water in the outlying precincts. Seventeen cases have been traced to one well, and it has been closed. At the bottom of the whole thing, says Dr. Inglis, the City Health Officer, is the necessity for a pure supply of water sufficient for drinking and sanitary purposes for the whole city. Without this, we may check typhoid somewhat, but we shall never get fairly rid of it, and annually many valuable lives will be lost through the agency of this disease.

SUPERIOR BOARD OF HEALTH OF MEXICO.—Eduardo Dicéaga, President, Mexico; José Ramirez, M.D., Secretary-General, Mexico.

BUENOS AYRES, 580,371: Albert B. Martinez, Director-General of Municipal Statistics.

During the month of July there were reported 1168 deaths, of which 590 were under five years of age. The annual death-rate per 1000 was 23.1. From epidemic diseases there were 50 deaths, and from consumption, 95.

THE WATER-SUPPLY AT JERUSALEM.—The Turkish Ministry of Public Works has determined upon the reconstruction of the ancient water conduits of Jerusalem, dating from the age of King Solomon. By this means it would be possible to convey 2500 cubic metres of water daily to the Holy City. Of this it is proposed to give 1000 metres away free of charge to the poor of Jerusalem, the distribution to take place at the Mosque of Omar, the Holy Sepulchre, and other places frequented by pilgrims. The new conduits are to be joined to the ancient aqueducts of Arob, and are to be carried through a tunnel 3570 metres in length. The total outlay in connection with these works is estimated at 2,000,000 francs.—*London Standard.*

EDITOR'S TABLE.

SANITARIAN, NOVEMBER NUMBER, 1894.

☞ ALL correspondence and exchanges and all publications for review should be addressed to the Editor, DR. A. N. BELL, Brooklyn, N. Y.

OLIVER WENDELL HOLMES.

A LITTLE more than fifty-four years ago this writer was privileged to become one of Dr. Holmes' medical students. His rare personal congeniality as a teacher, the charm of his writings, and the interest he took in THE SANITARIAN from the time of its projection twenty-two years ago to the time of his death, served to establish and maintain a cordiality of relations between him and the writer more and more endearing with his advancing years; nor, indeed, will the influence of those relations by any means cease with his life. Oliver Wendell Holmes died October 7th, 1894, in his eighty-sixth year.

As it has been and is with this writer, it is in like manner, though perhaps less intimately, with the medical profession generally, to whom Dr. Holmes has been and will continue to be an exceptional honor. He won their love in his lifetime, and he has left them a legacy that will live forever. In a brief biographical sketch of him, with portrait and data kindly furnished by himself, and catalogue of his writings, published in THE SANITARIAN eleven years ago, occasion was taken to say of him:

"In so far as Oliver Wendell Holmes has greatly contributed to the joys of life by his contributions to mental culture on the highest plane of literature, he is rightly to be regarded among the foremost promoters of sanitary science."

The influence of Dr. Holmes' teachings on the same field of view has been a constantly expanding force, and no one more than he enjoyed its contemplation. But however vast

and attractive this field, it was but an item in Dr. Holmes' contemplation. Physician, poet, philosopher and philanthropist, and marvellous genius, in that he so singularly combined these qualities and adapted them to the needs, receptive conditions, and improvement of the human mind as to command the attention, admiration, and love of all English-speaking people—in that he did all this the world is the better for his having lived. He is deserving and will be awarded a foremost place among those who have done most for the well-being of mankind.

AMERICAN PUBLIC HEALTH ASSOCIATION.

Abstract of the Proceedings of the Twenty-second Annual Meeting, held at Montreal, Canada, September 25th-28th, 1894.

First Day, Morning Session. The Association convened at ten o'clock in the Hall of the Young Men's Christian Association, and was called to order by the President, DR. E. P. LACHAPPELLE, of Montreal.

DR. ROBERT CRAIK reported on behalf of the local Committee of Arrangements.

DR. GEORGE H. F. NUTTALL, Associate Professor of Hygiene in Johns Hopkins University, contributed a paper on "*Hygienic Notes Made on a Short Journey through Italy in* 1894," which, in the absence of the author, was read by Dr. Gihon. The writer dwelt particularly upon the former and modern sanitary conditions of the cities of Naples, Rome, Florence, and Milan, and compared the modern hygienic environments and conditions of those cities even to 300 B.C., as was instanced by Rome's condition at that period, to those of the present day. The sewers, water supply and drainage systems of Naples were described. The aqueducts of ancient and modern Rome, her extensive hygienic laboratories, hospitals, etc., were also described, while Florence was denominated the cleanest city in Italy. Her slaughter-houses are large and well kept. Chlorotic girls at the latter city frequently visit those (at best apparently uninviting) places, and drink the fresh defibrinated blood from the slaughtered animals. There the hair from slaughtered pigs is removed by singeing.

This is regarded as the best method, but it injures the meat. A description of how the dog pounds are kept and how the unclaimed animals are put to death was minutely dwelt upon.

Cremation in that country has steadily increased. Comparisons were made in this respect with that of the burial of the dead. In 1876 the first crematory was built at Milan, while twenty-one towns in Italy to-day have official crematories. In Milan it costs 40 lires and upward for each cremation, while in Rome a first-class cremation costs 180 lires down to 60 lires. The indigent poor in both cities are cremated free.

The President announced that several papers on water supplies would be read, and suggested that discussion upon Dr. Nuttall's paper be deferred.

"*The Cart Before the Horse*" was the title of the next paper, by DR. BENJAMIN LEE, Secretary of the State Board of Health of Pennsylvania, who said in part: "When those who speak the English language desire to characterize a line of thought or of procedure as being in the very highest degree ridiculous and absurd, they make use of the word preposterous, a word which they have had handed down to them from the days of ancient Rome; for the Roman with his strictly logical mind could conceive of nothing more grotesque and idiotic than placing that which should properly and reasonably be *pro—before*, whether in relative position or in sequence of time, *postero—behind* or *after*. The Saxon, with his love for the concrete and his fondness for epigram, crystallized the thought into the proverbial expression, 'the cart before the horse.' I know of no more forcible exemplification of this trite but useful old adage than the absolute reversal which we so constantly find of the appropriate relative positions in point of time of the introduction of water supplies and the provision of systems of drainage. The first thought of the citizen who proposes to build himself a country residence is beauty of location. The second, architectural adornment. The third, possibly, a copious and pure water supply; and with this, modern plumbing follows as a necessary accompaniment. Last of all, he or his architect bethinks himself that it will be necessary to find a receptacle for this considerable stream which he is going to divert from its natural course and fill

with the accumulated filth of his household. That which should have been most carefully considered first, before a line was drawn or a plan designed, is left to be provided last, in some haphazard way, as if it were a trifling detail of no moment whatever. The problem may prove impossible of satisfactory solution to himself. Or if provision can be made in such a way as to relieve himself of annoyance, the chances are ten to one that his neighbor will begin to complain of the flooding of his yard or the pollution of his well; or, what is still worse, and unfortunately of undoubtedly frequent occurrence, sickness may be created in families more remote, the cause of which is unsuspected and therefore unremoved.

"The little towns among the hills and mountains of Pennsylvania are peculiarly fortunately situated for the production of an abundance of pure water. The municipal authorities of these towns are besieged by water-supply contractors, generally from New England, and therefore having no local interests in the town, with offers to introduce water on very advantageous terms. The temptation is great and is often yielded to before a single rod of sewer pipe is laid in the streets. Then the 'practical' and 'sanitary' plumbers get in their fine work. Every ambitious citizen must have water all over his house, with all the modern appliances. The kitchen water, even though in greatly increased quantity, may pass off over the surface and through the street gutters. But what shall be done with that discharged from the water-closets? Happy thought! He no longer depends on the old family well for drinking water, so into that the soil pipe is incontinently discharged. So far so good. It does not annoy him. But he does not reflect that the same subterranean stream which supplies his well in all probability supplies those of the entire neighborhood. It can be readily understood how that which should have proved to be an inestimable blessing to the community may thus inadvertently be converted into a terrible calamity. Even in gravelly soils, where opportunity for filtration to a considerable degree exists between neighboring wells, this danger is a most serious one. It will easily be seen how much it is aggravated in limestone regions where the water courses along underground for great distances, almost unobstructed. And yet it is just under these circumstances

that the temptation to avail one's self of this so-called natural drainage is the greatest. The object of this paper may be briefly embodied in the two following propositions :

" 1. Copious water supplies, with the aid of what is known as modern plumbing, constitute a means of distributing fecal pollution over immense areas through the soil, through subterranean water-courses and in surface streams, and cannot therefore be regarded with unmodified approbation by the sanitarian.

" 2. The question of drainage and sewerage, whether for individual residences or for communities, should always precede that of water supply ; and no water-closet should ever be allowed to be constructed until provision has been made for the disposition of its effluent in such a manner that it shall not constitute a nuisance prejudicial to the public health."

" *Observations upon Sedimentation in Water*," by DR. WYATT JOHNSON, bacteriologist to the Board of Health of the Province of Quebec, was the next. The author stated, among other things, that large natural bodies of water, standing, become purer and less free of bacteria, and water improves as the result of sedimentation. Improvement depends also upon the capacity of water for keeping. The Montreal city supply of water was carefully described. It is received from the St. Lawrence River through an aqueduct six miles long, connected with a reservoir that contains about 35,000,000 gallons, which undergoes a certain amount of change daily. About 23,000,000 gallons is used every twenty-four hours for the city. Relative to the number of bacteria in the reservoir and in the settling basin throughout the year, his observations showed in the Montreal supply the average number of bacteria throughout the year was 170 per cubic centimetre in the basin, and but 72 are to be found in each cubic centimetre of water taken from the reservoir. The writer submitted two sets of observations analyzed from water of the Ottawa River as well as that taken from the St. Lawrence.

The recent theory that sunlight is a great agent to cause the disappearance of bacteria from water was referred to, although his observations and deductions, while not quite clear, do not show that sunlight penetrated into deep layers of water.

The fourth paper of this forenoon session was read by DR. A. N. BELL, of Brooklyn, editor of THE SANITARIAN, on "*The Long Island Water Basin—Brooklyn's Reservoir.*" It will be printed in full hereafter.

The fifth paper was on "*The Well Waters of Our Farm Homesteads,*" by FRANK T. SHUTT, Chief Chemist Federal Experimental Farm, Ottawa. The subjoined is a brief synopsis:

The purest water is undoubtedly to be found in the country, and it is a necessity for farm animals as well as for man to have pure water, that milk from healthy milch cows may be wholesome, and that butter and cheese may be likewise. Clay soils are more or less impervious to the absorption of filth, and in this we should be careful from a hygienic standpoint. Regarding the qualitative tests for diagnozing water, the writer thought no correct inference could be drawn from the sugar, nitrate of silver, or permanganate of potash test. The remainder of the paper consisted in a cursory review of wells and their environments, and directed attention to the fact that much impure water is consumed in the country with serious and often fatal results, and pointed out the principal lines upon which corrections should be made and a reform brought about: "As the agriculturists form a very large proportion of the population, I think it well that we who take an active interest in the health of our people should endeavor to disseminate through the country knowledge regarding the injurious effects of impure water, and the precautions necessary to be taken if pollution of the well is to be avoided. I have no doubt that one of the beneficial results of this convention will be a keener and better and more intelligent understanding of this vital subject, an understanding that will lead to purer water and better health upon our farm homesteads."

The next paper was on "*Sand Filtration of Water, with Special Reference to Recent Results Obtained at Lawrence, Mass.,*" by GEORGE W. FULLER, bacteriologist in charge of the Lawrence Experiment Station of the State Board of Health of Massachusetts. It will appear in full in the December SANITARIAN.

The concluding paper of the forenoon session was on "*Some Deductions from Bacteriologic Work on the Water of Lake Onta-*

rio," by DR. E. B. SHUTTLEWORTH, Professor of Bacteriology, Trinity Medical College, Toronto, and bacteriologist to the Toronto Board of Health. The paper dwelt upon the bacteriologic work done in connection with the water supply of Toronto. The city of Toronto is supplied from Lake Ontario through an intake located 2200 feet from the shore of the island. The mouth of the intake is eighteen feet from the bottom of the water, which is there about seventy-five feet deep. The supply passes through a six-foot steel pipe, and thence through a wooden pipe to the south shore of the island, where it joins a steel pipe and is carried a distance of 6000 feet across the land. It there reaches Toronto Bay, which at this point is about 4500 feet wide, and is conveyed by a three-foot cast-iron pipe and a four-foot steel pipe, both of which terminate in a pumping well on the city side. The entire length of the conduit is nearly two and a half miles, the connections being made by cribs fitted with manholes, through which samples of water can be obtained. These cribs mark the extension of the pipes lakeward, as the intake was at intervals of years carried farther out.

The paper contained a review of the normal bacteriologic character of the lake water, the effect of season and the number of bacteria as indicating sewage contamination, and the relation of bacteria to enteric-fever. The statistics regarding the latter from December, 1892, to October, 1893, have been alluded to, the abscissæ being monthly periods of time throughout the year. The writer concluded that at the time the accident befell the pipe across the bay on December 25th, 1892, by which large quantities of sewage gained access to the supply, increased the number of bacteria per cubic centimetre and increased suddenly the enteric diseases, affording additional and conclusive evidence of the close relation which exists between sewage contamination and this class of maladies.

"*Pure Water vs. Purified Water for Public Water Supplies,*" by MR. DANIEL W. MEAD, of Rockford, Ill., and "*Water Supply of Towns,*" by DR. A. P. REID, Secretary of the Provincial Board of Health of Nova Scotia, were read by title only, the authors not being present.

The afternoon session began at three o'clock.

The first paper submitted was the "*Report of the Committee on the Pollution of Water Supplies,*" given in full on other pages.

DR. C. O. PROBST, Secretary of the State Board of Health of Ohio, submitted a resolution as follows:

Resolved, That this Association approves the suggestion of a co-operative investigation into the bacteriology of water, and commend the efforts of the committee in carrying out this work to the officers of State and municipal boards of health, to the individual members of this Association, and to all persons interested in the purity of water supplies, for such special assistance as they may be able to render.

Under the rules, referred to the Executive Committee, DR. G. T. SWARTZ, Secretary of the State Board of Health of Rhode Island, remarked on the report, as given by the committee, that it was most thorough, and can be read and re-read—each time with interest. The bacilli coli communis is not always present in typhoid-fever cases. Mechanical filters have certain advantages over sand filters. Ptomaines may find their way, when filtered, through these. Mechanical filtration is the most expensive, but this may be due to certain conditions, as where sand may or may not be obtainable.

DR. J. H. GARDINER, of London, Ont., spoke upon some of the subjects under discussion, and closed with a resolution regarding "The Cart Before the Horse":

Resolved, That, in view of the danger to the public health by the contamination of our fresh-water lakes, rivers and streams, this Association memorialize the different federal governments, as well as the State and provisional governments, to pass laws prohibiting the contamination of these water supplies by sewage from cities, towns, and villages, and compel them to provide some means for the treatment and oxidization of this sewage before emptying it into these places.

Also referred to Executive Committee.

The Presidential Address of DR. LACHAPPELLE, the leading paper of this issue, was delivered at the evening session of the first day.

(*To be continued.*)

NEW BOOKS AND BOOK REVIEWS.

ANY BOOK reviewed or advertised in THE SANITARIAN costing $1.50 or less will be sent *free* to any present subscriber sending the name of a new subscriber, or to any new subscriber on receipt of the full subscription price sent on his own account; or any book so reviewed or advertised costing more than $1.50 will be sent at a discount of that amount.

A MANUAL OF HUMAN PHYSIOLOGY, PREPARED WITH SPECIAL REFERENCE TO STUDENTS OF MEDICINE. By JOSEPH H. RAYMOND, A.M., M.D., Professor of Physiology and Hygiene in the Long Island College Hospital, and Director of Physiology in the Hoagland Laboratory. With 102 illustrations in the text and 4 full-page colored plates. Pp. 381. Price, $1.25 net. Philadelphia: W. B. Saunders.

This book is an admirable presentation of the main facts and principles of physiology as the special need of medical students, in accordance with the author's conclusion after twenty years' experience as a teacher of physiology, "that in the short time allotted to the study of physiology in medical schools, students can only assimilate the main facts and principles of this branch of medicine." Yet the work is essentially systematic, though elementary. It is elementary in the sense of being a terse comprehension of the principles of physiology, together with a clear description of the vital functions in their anatomical relations. Thus, while it comprehends all the knowledge of physiology deemed necessary to fit the medical student to enter upon the practice of his profession, it lays the basis and formulates well-defined lines for subsequent investigation in the progress of practical experience.

ESSENTIALS OF DISEASES OF THE EAR. "Saunders' Question Compends." Arranged in the Form of Questions and Answers. Prepared especially for Students of Medicine and Post-Graduate Students. By E. B. GLEASON, S.B., M.D.,

Clinical Professor of Otology Medico-Chirurgical College, Philadelphia; Surgeon-in-Charge of the Nose, Throat, and Ear Department of the Northern Dispensary, Philadelphia. Pp. 147. Illustrated. Price, $1. Philadelphia: W. B. Saunders.

This, like other volumes of the same series, is a concise review book of the subject in question, based upon a more comprehensive study, well calculated to intensify the recollection of the essentials and to aid the student in ready reckoning.

SYLLABUS OF LECTURES ON HUMAN EMBRYOLOGY. An Introduction to the Study of Obstetrics and Gynæcology. For Medical Students and Practitioners. With a Glossary of Embryological Terms. By WALTER PORTER MANTON, M.D., Professor of Clinical Gynæcology and Lecturer on Obstetrics in the Detroit College of Medicine; Fellow of the Royal Microscopical Society, of the British Zoölogical Society, American Microscopical Society, etc. Illustrated with 70 outline drawings and photo-engravings. 12mo, cloth, 126 pages, interleaved for adding notes and other illustrations, $1.25 net. Philadelphia: The F. A. Davis Co., Publishers, 1914 and 1916 Cherry Street.

The substance of this book is well expressed in the title-page. It is essentially an introductory work, so arranged, with intervening blank pages for taking notes of lectures, as to stimulate attention and cultivate a more elaborate knowledge of the subject than the book pretends to give. To the medical practitioner, as well as the student of medicine, it is an excellent note-book, in that it gives the data of the weights and measures, as it were, at the points of departure and at the different stages of embryological development—data to which every physician frequently has occasion to refer, and without the time to search for them in more elaborate works.

LANDMARKS IN GYNÆCOLOGY. By BYRON ROBINSON, B.S., M.D., Professor of Gynæcology in the Chicago Post-Graduate School; Gynæcologist to the Woman's Hospital, the Charity Hospital, and the Post-Graduate Hospital, Chicago. Vols. I. and II. The Physicians' Leisure Library Series. Price, 25 cents each. George S. Davis, Detroit.

The "Landmarks" into which the general subject of these volumes is divided are the headings as given by the author for the convenience of teaching, as adopted in his lectures, for the purpose of impressing upon practitioners and students the chief features of gynæcology: Anatomy, menstruation, labor, abortion, gonorrhœa, tumors, puerperal-fever, sterility, prophylaxis, treatment. This classification is used to call attention to the significant clinical events in the life of a woman, and under it the author presents some original views—the result of much clinical work in gynæcological autopsies, surgery, and dissections—of interest to all physicians and instructive to medical students.

HOME TREATMENT FOR CATARRHS AND COLDS. A handy guide for the prevention, care, and treatment of catarrhal troubles, cold in the head, sore throat, hay-fever, hoarseness, ear affections, etc. Adapted for use in the household, and for vocalists, clergymen, lawyers, actors, lecturers, etc. By LEONARD A. DESSAR, M.D., visiting laryngologist to St. Mark's Hospital, and to Mount Sinai Hospital Dispensary, etc. Illustrated. New York: Home Series Publishing Co., P. O. Box 1406. 1894.

The topics discussed in this little book are of more than ordinary interest to the general reader in view of the prevalence of catarrhal troubles in this country, owing to our variable atmospheric conditions. The author describes the structure and functions of the nose, throat, and ear; various affections of these organs, their causation and symptoms, prevention and *treatment*. This last, in too much detail for domestic use. Many manipulations and prescriptions are directed which should not be used without the advice of a physician. Otherwise—on the presumption that the lay reader has acquired sufficient knowledge by attractive pictorial descriptions—they are as dangerous as sailing orders to a landsman who would undertake a voyage, captivated by the beauty of a boat and an outlook over a smooth sea. A good deal more about how to avoid the prevalence of catarrhal troubles, sore throats, etc., and the danger of neglecting them, or worse—the risks of household treatment—and the book would be a much safer guide for whom it is professedly adapted than it now is.

EIGHTEENTH YEAR-BOOK OF THE NEW YORK STATE REFORMATORY, ELMIRA, N. Y. Containing the Annual Report of the Board of Managers for the Year ending September 30th, 1893.

It is a pity but that this report could be sent to every person throughout the country—ay, the civilized world—who has had his attention arrested by the scandalous use that the New York *World* has made of some of the most notorious reprobates that ever disgraced a public institution. It is not possible to properly review this report in these pages without recalling to mind what we have had occasion to say of previous reports, fortified by personal observation, that it is deservedly recognized as the foremost reformatory institution in the world. Its objects, the history of its progress, as made known by its annual reports, and the successful prosecution of its work, notwithstanding numerous legislative obstacles, are too well known to all persons who take interest in reformatory methods to require rehearsal. The report for the year 1893 is cumulative of its continued excellence. The statistics summarized are as follows :

Since the opening of the institution, July, 1876, to the close of the fiscal year 1893, number of direct commitments to the Reformatory from the courts, 6551 ; total number discharged, 5166 ; indefinites returned from parole and still in custody, 24 ; prisoners count, September 30th, 1893, 1409.

Sentenced to definite terms, 400; to indefinite terms—period of detention limited only by the maximum term provided by the penal code for the particular crime of each prisoner—6151.

Total number paroled, 3723 :

Absolutely released	2,399
On parole, not yet absolutely released	622
Discharged by special order of managers	5
Discharged by expiration of maximum term	500
Died	20
Sentence superseded	58
Transferred to State prisons, and now there remaining	54
Discharged from State prisons, by expiration of maximum term	40
Transferred to State prison and pardoned therefrom	1

Returned to Reformatory and now in custody..... 24
Estimate of those reformed :
Served well and earned their release..... 2,244
Serving well on parole now..... 231
Absolutely released because paroled out of the State ; correspondence maintained for six months or more... 101
One half of those who, being sent out of the State and absolutely released at the date of parole, ceased correspondence and were lost sight of..... 27
One half of those discharged by maximum expiration.. 253
One half of those lost sight of..... 195
Total, 3051 : 81.9 per cent.

Returned to the Reformatory and now there remaining, 24 : 0.7 per cent. Died, 20 : 0.5 per cent.

Probably returned to criminal practices and contact :
One half of those who, being sent out of the State and absolutely released at date of parole, ceased correspondence and were lost sight of..... 27
One half of those discharged by maximum expiration.. 252
One half of those lost sight of..... 196
Sent to other prisons..... 153
Total, 628 : 16.9 per cent.

The average detention before parole was twenty-two months.

Parole statistics for the year ending September 30th, 1893 :
Total number paroled..... 452
Served well and secured their absolute release..... 107
Correspondence and conduct now maintained, the period of parole not having expired..... 227
Ceased correspondence, thus failing to fulfil obligations, and lost sight of..... 90
Discharged by expiration of maximum term..... 7
Died on parole, doing well up to time of death..... 2
Sent to other prison while on parole..... 1
Returned to Reformatory by arrest..... 18

A biographical compendium relating to 6141 of the inmates indefinitely sentenced since the opening of the institution, shows that, as far as ascertainable, the proportions apparently traceable to hereditary influences and environment are about equal.

Education, there were without any (illiterates). 1,167 or 19 %
Simply read and write (with difficulty)..... 2,805 or 44.6%
Ordinary common school..... 1,956 or 31.8%
High school or more..... 221 or 3.6%

The Technological Instructors' Report shows that 94.8 per cent of the men committed to the Reformatory during the year had no knowledge of any trade at the time of their reception, while 37.5 per cent of those released were capable of earning journeymen's wages, and 50.8 per cent were advanced apprentices. In all, 78.5 per cent of those paroled secured employment at trades acquired in the Reformatory.

The Superintendent of Schools reports that every inmate belongs to the school and must perform some educational task. The course does not give a smattering of many things. Only a few branches, in fact, are taught, and in these, while no attempt is made to pursue subjects exhaustively, every topic, so far as it is taken, is studied and taught with all possible accuracy and thoroughness.

A library comprising some five thousand bound volumes and a thousand magazines; and the institutional newspapers, *The Summary* and *The Annex*, conducted by the inmates, are valuable accessories. Every inmate, save the few temporarily deprived of the privilege for soiling their books, is entitled weekly to a new work on fiction, and semi-monthly to a volume of more severe character from the "reference library."

Military training is also a standing feature, under a special instructor. It does not look to making soldiers of the inmates, but to bringing them to a condition of constant mental alertness; to teach them unquestionable obedience to government, to better their physical condition. In conjunction with the gymnasium, it cares (1) for the physical activities of the inmates, with the mental and moral results incident to such training; (2) it regulates the every-day movement of the population, placing them on a basis familiar to all; (3) it ensures discipline, by means which no other system could command. Its advantages as a regulator of the general industrial and domestic movements are many. When repairing to trade-school, school of letters, shop, chapel, cell, dining-room or elsewhere, according to the needs of the moment, there is no

confusion nor necessity for the degrading lock-step common to penal institutions

Among the particularly incorrigibles it has sometimes been necessary to inflict corporal punishment—spanking with a leather paddle—and this has been made the basis of the *World's* charges of cruelty, and which, if the witnesses adduced are to be believed, would show, under the searching investigation of Professor Flint, that congenital defects of the senses of sight and hearing in those who have testified are situated in the buttocks.

The Physicians' Report shows total admissions to the sick list during the year, 189; of whom there were paroled, 11; transferred to State hospital, 1; remaining, September 30th, 27; deaths, 24. Of the deaths, 10 were from pulmonary tuberculosis.

Short notes on anthropology, like the tabulated biographical compendium, are interesting studies in sociology.

THE MEDICAL REGISTER OF NEW YORK, NEW JERSEY AND CONNECTICUT, for the year commencing June 1st, 1894, published under the auspices of the New York Medico-Historical Society, edited by JOHN SHRADY, M.D., and published by G. P. Putnam's Sons, New York, is a little later this year than usual; but this is to be accounted for by the change in editorship, consequent upon the death of Dr. W. T. White, who had been its editor for fifteen years consecutively. It has been judiciously pruned of some redundancy of credentials, enumerations of society memberships, etc., in the catalogue (and would yet stand more without impairment of its usefulness), in order to keep it within reasonable bounds, while it yet appears to contain everything useful as a reference book for the names and addresses of all the members of the regular profession of medicine, in the several States; of dentists, pharmacists, and nurses in New York and Brooklyn; of medical colleges, schools, hospitals, asylums, dispensaries, charities—of all institutions with which the medical profession has more or less to do in the several States; of all medical colleges and organizations in good standing in the United States. And the arrangement of the material is such as to afford the utmost facility to all who have occasion to refer to it—eminently creditable to the new editor.

CONTEMPORARY LITERATURE

THE ELMIRA REFORMATORY.

Charles Dudley Warner, in an address before the American Social Science Association, September 6th, gave a brief outline of the Reformatory for the benefit of those whose attention had never been called to it, of which the following is an abstract: "Those sent there must be between the ages of sixteen and thirty and on the first conviction of a felony. They may be detained there for the full term for which they could have been sentenced to a State prison. They may be released in one year. The inmates are divided into three grades, each having distinctions of lodgings, dress, food, and privileges. The newcomer is put into the second grade. He is carefully examined as to his qualities, physical, intellectual, and moral, and is then assigned to the labor for which he is best adapted, and to the school fitted to his acquirements, and is instructed in the rules of conduct. At that moment his threefold training, physical, mental, and moral, begins. He is strictly marked for performance in the school, in the shop, and in conduct, and if he falls below the standard he is degraded to the third rank. If he maintains the standard six months he is promoted to the first grade, and if he maintains it there for six months he is a candidate for liberty on parole. This is granted by the Board of Trustees, on an examination of him and his record, and only when a proper situation is found for him. There must be a satisfactory report monthly of his conduct for six months, upon which he is given unconditional liberty. If his conduct is not satisfactory at any time in the six months' probation he can be recalled to the Reformatory. This hope of liberty presents the strongest possible inducements to personal improvement."

And among the topics of timely interest singled out for editorial comment in the "Progress of the World" of the October *Review of Reviews*, is the Elmira Reformatory system, of which the editor says: "Nowhere else in the world can there be found such a concrete exhibition of the possi-

bilities of character-building as in this institution, which has been created by the genius and the untiring devotion of the greatest penologist of modern times or of any period. Mr. Brockway professes to find a certain small percentage of these criminals under his charge who are so hardened and whose whole lives have been so unfortunately environed that they seem utterly lacking in moral sensibility. The rules of the Reformatory are reasonable and are carefully devised for the ultimate well-being of the inmates. In the case of repeated and stubborn refusals to observe these rules, Mr. Brockway has been accustomed to administer corporal punishment. He affirms that the results have abundantly justified this course. The young criminal when once subdued by the only thing that can impress him—fear of physical pains—becomes amenable to the regulations of the place, performs his allotted tasks, and gradually finds that the path of duty is pleasanter and better than that of wrong-doing. Everything about the system is so adjusted as to make it seem worth while to do right and altogether mistaken and unprofitable to do wrong."

PAIN.

Thou drear companion of the slow night-hours,
Thou sharpener of the soul! Long, long had I
Waged weary combat with thee, though my cry
Of anguish only cheered thy mocking powers,
As through the years we strove; no respite ours,
Till, lo! one day each breathed victorious sigh,
The master, thou, of my mortality,
But master who beneath my spirit cowers
Its slave forever. Now fast friends are we,
My vanquished victor Pain, and much I owe
To thy stern fellowship: through thee I see
With quickened sense all things both high and low,
For knowing all that I can never be,
Tutored by thee, all wider life I know.

—*Elizabeth West in the Century for October.*

CLEANSING THE STREETS IN PARIS is the subject of a particularly interesting and elaborately illustrated article in *Harper's Weekly*, October 6th, to which American municipal

authorities would do well to give heed. When it is said that the entire pavement surface of Paris is swept clean every morning, and that to accomplish this only 3200 men are employed at most, and a large proportion of these only for a few hours each day, it hardly needs saying that the work of the street-cleaning service is conducted in a most systematic way. The plan adopted is, however, extremely simple. For purposes of street-cleaning the city has been divided into 150 districts, called "ateliers." Each atelier is presided over by an official known as a "cantonnier," who is held responsible for the proper care of all streets in his territory. Such a force of subordinate employés and such machinery and apparatus are provided as experience has proved necessary. The "cantonniers" and their chief subordinates are salaried officials (at from 100 to 125 francs per month), and give their entire time to the service; the other employés are paid by the hour (strong men receiving 32 to 37 centimes, and "women, children, and weak men from 25 to 30 centimes"), and, as a rule, are employed only during the morning hours.

The main body of the work is done by sweeping-machines, each drawn by a single horse, the work of hand-brooms being only supplementary. The order of procedure is practically the same in all parts of the city and over all kinds of pavements. Summer and winter the work begins at 4 A.M. In advance goes a watering-machine to settle the dust. This is followed in narrow streets by a single machine, and in wider ones by two or even three machines in succession, the foremost one nearest the centre of the street. Such a cavalcade passing up one side of a street and back the other shifts all the surface garbage of that street into the gutters on either side, while a single man following flushes the gutters, and directs all but the bulkier portions of the garbage into the sewer openings, situated at short intervals between the hydrants. Such a cavalcade is equivalent to a small army of hand-sweepers, it being estimated that each machine does the work of twelve men—that is to say, of twelve Parisians, each of whom is supposed to sweep 500 square metres in an hour. Just what the equivalent of a machine would be in terms of the doughy-muscled time-servers employed in New York's farcical street-cleaning service it would be hazardous to guess.

Each cohort of watering-carts and sweeping-machines has, of course, its definite district to cover, and so accurately are these apportioned that all the different cohorts finish at practically the same time. By about 8.30 the entire city has been swept, and the detritus worn from the pavements by thousands of hoofs and wheels the day and night before is being carried harmlessly on through the great sewers to the Seine, instead of hurtling on every chance gust into the face of the wayfarer, as does the dust of less favored cities.

LOSS OF LIFE ON ENGLISH AND AMERICAN RAILROADS.—In safety, then, the English railroads are far beyond those of the United States. In six recent years the railroads of the United States killed sixteen times as many passengers as those of the United Kingdom, in proportion to the number carried. This is not a fair comparison, however, for the journey of each passenger was longer in the United States—how much longer we do not know, for the English statistics are incomplete in this particular. Relatively to the total train movement of all kinds, which is a rough basis of comparison, but fairly just, the United States railroads killed about four and a half times as many persons as the English, in six years.—*From "Railroad Travel in England and America," by H. G. Prout, in the October Scribner.*

MARRIAGE AND LONG LIFE.—Among the Massachusetts centenarians one in eleven of the women had never been married, while among the men the corresponding proportion was only one in twenty-three. Further than this, while there were three times as many women as men among the centenarians as a whole, there were six times as many among the unmarried ones. It would seem to be a fair inference that the effect of celibacy is less fatal to longevity among women than men. Nor is this other than might be expected, when we consider how helpless and dependent is an old man, and how unable to care for himself in the little niceties of life which contribute so largely to health and comfort, and how much less so in all these respects is an old woman.

But it would be a manifest error to conclude that, because the average age of the married exceeds that of the unmarried,

therefore this excess of longevity is due to the married state, unless it can first be shown that the individuals composing the two classes were originally in the enjoyment of the same degree of health and soundness of constitution; whereas, it is an indisputable fact those persons entering the married state are, as a whole, more robust and enduring, and hence have a greater natural expectation of life, than those who remain single; and it is also evident that repeated marriages, and especially marriages late in life, are indications of a greater than usual degree of vigor and vitality. They are therefore in the nature of an effect, rather than a cause, of extreme longevity.—*From "Some Lessons from Centenarians," by Dr. J. M. French, in The Popular Science Monthly for October.*

ALLEGED DEATH FROM VACCINATION.—On September 1st the adjourned inquiry into the cause of death of Ethel May Everest was held before Dr. C. Luxmore Drew at the Fulham mortuary. The infant was vaccinated when seven days old by Mr. Steer, Medical Superintendent of the Fulham Infirmary. Nothing unusual occurred for some time after the vaccination, which ran a normal course. At a later period a "rash" developed on the arms, legs, and head, and for this the child was taken to the Jubilee Hospital, where it was attended by Dr. Benham, on August 17th. On August 20th it became worse, and Mr. Saltmarsh was consulted. There was then difficulty in breathing and considerable swelling of the neck on each side near the angles of the jaw. Death occurred on the 21st. At the preliminary investigation Mr. Saltmarsh gave it as his opinion that the cause of the fatal issue was blood-poisoning. Considering the gravity of the case, for it was alleged that the death was connected with the vaccination, Dr. Drew adjourned the inquiry and ordered a *post-mortem* examination to be made. This was conducted by Mr. Pepper. The rash before referred to was eczema impetigo of the scalp. No eruption was detected on the arms and legs. The vaccination scar was perfectly healthy, and the axillary glands on the same side were normal. There was no trace of pyemia in any part of the body. Careful attention was given to the joints and meninges of the brain, as these parts are commonly involved in pyemia in young children, but they

were free from any trace of inflammation. The mucous membrane of the pharynx was somewhat congested, and the associated lymphatic glands were greatly enlarged and much congested. There was no pulmonary disease to account for the difficulty in breathing observed by Mr. Saltmarsh. Mr. Pepper's evidence was to the effect that neither the vaccination nor the "rash" had any part in causing the death, which was attributed to toxemia consequent on some acute affection, probably scarlet-fever or diphtheria. It was true that no specific lesion was demonstrated in the throat, but the congestion of the part, taken with the manifest enlargement of the cervical glands and the absence of other recognizable cause of comparatively sudden fatal illness, warranted the conclusion arrived at. Had it been necessary, there would have been no difficulty in tracing the source of the humanized lymph employed in the vaccination, but the facts obtained by the *post-mortem* examination rendered further inquiry needless. The jury were unanimously of opinion that the vaccination had nothing to do with causing the death. The above case shows the advisability, nay, the necessity, of a necropsy when the ultimate cause of death is obscure. Mr. Saltmarsh was quite correct in the opinion he formed as to the blood-poisoning, but the all-important question to be decided was whether the vaccination and the fatal toxemia were in simple or causative sequence. This was uncontrovertibly answered in terms of the later medical evidence and by the verdict of the jury.—*Lancet.*

LITTELL'S LIVING AGE continues to maintain the highest degree of literary excellence as a weekly eclectic. Its selections are taken from the leading foreign quarterlies, reviews, and magazines with the truest judgment, and in its variety there is something for every cultivated taste. "The Outskirts of Europe," by J. D. Rees; "A Greek Courtship," by F. M. F. Skene; "Surgery and Superstition," by Frank Rede Fowke; "The Rajahs of Sarawak," by Hughues le Roux; "The Question of Korea," by Henry Norman; "Time-Gauge of Niagara," by Thomas W. Kingsmill; "The Hadramut: A Journey in Southern Arabia," by J. Theodore Bent; "The Buried Elephants in the Arctic Regions,"

by D. Gath Whitley; "Hobbes," by Frederick Pollock; "Mr. Ruskin as a Practical Teacher," by M. Kaufman; "The Khedive of Egypt," by Stuart Cumberland, are some of the many valuable papers contained in recent issues and constitute about one third in number of those republished during any four weeks. New subscribers for 1895 are promised the thirteen weekly issues for the current quarter free. $8 a year. Address, Littell & Co., Boston.

HARPER'S MAGAZINE for October gives a generous instalment of Charles Dudley Warner's novel "The Golden House." It grows in interest as the story moves to its close in the November number. It also contains the conclusion of Brander Matthews's charming two-part tale of Narragansett Pier, called "The Royal Marine," and "The Old Gentleman of the Black Stock," one of Thomas Nelson Page's best and most sympathetic pieces of fiction. There are two poems in the number: "The Happiest Heart," by John Vance Cheney (see page 5), and "Unafraid," by Richard Burton (see page 15).

THE NORTH AMERICAN REVIEW for October is particularly interesting to the politicians. The two articles by the Hon. William L. Wilson and ex-Speaker Reed, which are bracketed together under the title of "Issues of the Coming Elections," form an important and valuable contribution to the political literature of the day. The article by the Archbishop of St. Paul on "The Catholic Church and the Saloon" possesses a special value at the present time in view of Mgr. Satolli's recent decision regarding liquor-dealers which has caused so much discussion. "The Municipal Problems of London" are ably discussed by the best living authority on the subject, the Lord Mayor of London.

PAMPHLETS, REPORTS, ETC., RECEIVED.

Agricultural Reports:

Leguminous Plants for Green Manuring and for Feeding. Farmers' Bulletin, No. 16, United States Department of Agriculture, Washington.

Sundry Investigations of the Year 1893, all Divisions. Cornell University Agricultural Experiment Station, Ithaca, N. Y.

Japanese Plums. Bulletin 62. *Ibid.*

Co-operative Test of Sugar Beets. Bulletin 63. *Ibid.*

Tuberculosis in Relation to Animal Industry and Public Health. Bulletin 65. *Ibid.*

Test of Cream Separators. Bulletin 66. *Ibid.*

Hints on the Planting of Orchards. Bulletin 69. *Ibid.*

Native Dwarf Cherries. Bulletin 70. *Ibid.*

Apricot Growing. Bulletin 71. *Ibid.*

Cultivation of Orchards. Bulletin 72. *Ibid.*

Abdominal Section for Dropsy. J. H. Kellogg, M.D., Battle Creek, Mich.

Antiseptic Drainage in Abdominal Surgery. *Ibid.*

Alcohol, Experimental Inquiries Respecting. *Ibid.*

Akromegally, A Case of. S. Solis-Cohen, M.D., Philadelphia.

Artificial Respiration in Asphyxia. J. Harvey Dew, M.D., New York.

Asepsis in Minor Procedures. Hunter Robb, M.D., Baltimore, Md.

Bedford Dispensary, Annual Report. Brooklyn, N. Y.

Bacteriological Training. Hunter Robb, M.D., Baltimore, Md.

Cataracts, Ripening of Immature, by Direct Trituration. Boerne Bettman, M.D., Chicago.

Cysticercus of the Vitreous. W. Cheatham, M.D., Louisville, Ky.

Schering's Chemicals for Medicinal Use. Schering & Glatz, New York.

Drop-Bottle, History of. L. Webster Fox, M.D., Philadelphia.

Demilt Dispensary Report. New York.

Dress, The Influence of, in Producing Physical Decadence of American Women. J. H. Kellogg, M.D., Battle Creek, Mich.

Editorial Association. Souvenir.

Electro-Therapeutic Association Announcement. 68 Madison Avenue, New York.

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THE DISCOVERER OF THE NEW SPECIFIC FOR CROUP AND DIPHTHERIA.

By C. W. CHANCELLOR, M.D., United States Consul at Havre, France.

THE question as to who is the real discoverer of the new sero-therapeutics for the prevention and cure of diphtheria and membranous croup continues to excite discussion in Europe, and even threatens to rival, in practical importance, that ancient but ignoble contention as to " Who struck Billy Patterson ?" Happy Dr. Jenner, who, born in 1749, before the era of bacteriology, had none to contest his claims to priority in the introduction of vaccination from the cow pustule for the prevention of small-pox ; and thrice happy the peerless Pasteur, who has handed his name down to posterity as the undisputed discoverer and introducer of attenuated doses of microbic poison, by subcutaneous and successive injections, for the prevention and cure of hydrophobia, and charbon or malignant pustule. To these two distinguished physicians alone belongs the credit of having *originated* the new therapeutic treatment which has vanquished diphtheria and robbed croup of its terrors.

The partisans of those eminent German and French scientists, who have *developed* Jenner's and Pasteur's method of treating infectious and malignant diseases, seem to have lost sight of the fact that the intrinsic value of the remedy can neither gain nor lose by the greater or lesser number of adherents to any particular scientist. In these days of cosmopolitan science, so to speak, it is a narrow nationalism that would draw the line and confine the application of a valuable discovery exclusively to the country of its origin, whether that country be France or Germany.

Fortunately, the question as to who discovered or introduced the prophylactic and curative vaccine serum, in the treatment of croup and diphtheria, does not seem likely to stand in the way of the remedy being universally adopted, since the phenomenal success which has attended its use has become *un fait accompli.* I have just read a dispatch from Rome which announces that " in consideration of the satisfactory results obtained, the anti-diphtheritic vaccine will henceforth be officially admitted into Italy ;" and there will no doubt be a general scientific appreciation of the discovery wherever it is practically tested. Germany alone seems to be holding aloof, notwithstanding the claims of the press of that country, both medical and secular, that the credit of the discovery is due to Dr. Behring, of Berlin, and to his colleague, Dr. Kitaisaio, who, although a Japanese, is now a resident of Berlin.

It is easy to see that the failure of Koch's tuberculine in 1891 has left a painful sting. The scientists themselves, be it said to their honor, do not participate in this unseemly contention, for it is stated that Dr. Behring was the first to admit Dr. Roux's priority of claim in the application of the *antidiphtheritic* serum to the human subject ; and Dr. Roux, in receiving the Commander's Cross of the Legion of Honor, at the hands of M. Casimir-Perrier, President of the French Republic, on October 23d, 1894, publicly acknowledged that to Loeffler, of Germany (whose microscopic eye first detected the microbe of diphtheria), and to Dr. Behring, of the same country, belonged the credit of having first discovered the virtues of an anti-toxic serum in the treatment of disease.

Now what is the exact process, and upon what grounds is priority of claim based ? Is it the idea of conferring, through the medium of live blood or filtered serum, a specific immunity to individuals against certain infections ? If so, it is quite easy to demonstrate that this idea, which is co-existent with the science of bacteriology, if not antedating it, does not belong to any particular nation or individual, although it has been more extensively practised in Germany and France than elsewhere.

As soon as it was ascertained (the idea seems to have been first suggested by German scientists) that certain animals were

refractory to certain diseases, either by nature or through the medium of an artificial process, the thought at once occurred to several investigators, about the same time, that this immunity could be imparted by means of the transfusion of the blood of immune animals into other animals or into the human subject. If I remember correctly, Dr. Harkins first suggested that the blood from the spleen of an immune rat could be used as a medium of conferring immunity to persons against diphtheria. The first methodical experiments were made with goats' blood against tuberculosis by Bertin, of France; and Hericourt made use of the blood of the dog for the same purpose. About the same time an American physician, Dr. Ashmead, of Philadelphia, I believe, suggested the possibility of conferring immunity to the white race against yellow-fever by transfusing the blood of the negro into the system of the Anglo-Saxon. Dr. Vignerat, of Switzerland, first tried the serum of the ass's blood for pulmonary consumption, which has been subsequently used with varying success.

At the time these experiments were inaugurated it was supposed that by some mysterious congenital idiosyncrasy dogs and goats were immune against tuberculosis; oxen against glanders; white rats and frogs against charbon; Japanese against scarlatina, and the negro against *vomito nigro*, or yellow-fever. Practical experience, however, proved that these immunities were by no means uniform, and that goats and dogs, at least, could be infected with tuberculosis. Nevertheless, this was the starting-point or germ of the idea of the systems known as hemato-therapeutics and sero-therapeutics.

It is claimed that Hericourt experimented with the serum of the blood of dogs for the cure of tuberculosis in 1889, one year before Behring and Kitaisaio experimented with antitoxic serum for the cure of tetanus. There is no reliable proof, however, that such is the fact; but it is known beyond question that Dr. Behring, in 1890, suggested and practised the immunization of animals against certain diseases by inoculating them with the toxines produced by the microbes of such diseases, and that subsequently he used the serum of the blood of animals thus rendered immune against certain

diseases, notably tetanus, as a prophylactic or cure for the same disease when existing in the human subject. This idea, it appears, has now been developed by Dr. Roux to the extent at least of curing diphtheria and croup in the human subject by injecting the blood serum of the horse previously immuned by Behring's process.

As to the physiological effects of the remedy, it has been claimed that the blood or blood serum of a refractory animal, when injected into the human subject, operates as an antiseptic, poisoning or asphyxiating the microbes, in the same way that a man would be poisoned or asphyxiated if shut up in an irrespirable atmosphere. In other words, the blood or serum transfused contains a bactericide or germ destroyer, whose action resembles that of hematine or phenic acid. These conclusions, if true, would seem to indicate that the sero-therapeutic process is a certain protection against living microbes, but powerless against the poisons or "toxines" secreted by such microbes, which are soluble and much more dangerous than the microbes themselves. To Drs. Behring and Kitaisaio belongs the credit of having corrected this error, by demonstrating that the anti-toxic serum acts not so much against the microbes as against the "toxine" which they secrete. The agent is, therefore, "antitoxic" rather than "antiseptic."

The champions of Dr. Roux's claims to priority allege that he and his co-worker, Dr. Yersin, discovered the facts upon which the sero-therapeutic process is based as long ago as 1888, but they admit that the experiments made at that time by these distinguished *savants* were unsatisfactory, and not sufficiently clear to be admitted into current practice.

In science the mere suggestion of a principle does not suffice; it must be developed and sustained by incontrovertible facts, and brought to the attention of all in a definite manner. This was accomplished by the studies of Behring and Kitaisaio, who in 1890 attained the great honor of generalizing the idea, although it must be admitted that their success at the time was confined to the treatment of tetanus. Their "antitetanine" was procured from the blood serum of animals that had been vaccinated by gradual injections of attenuated tetanic virus, which they demonstrated to be a positive preventive against tetanus when timely administered. In the cases

where it failed, as it did occasionally, the cause of the failure was attributable to the fact that the application of the remedy was made too late, or after tetanic rigidity convulsions had supervened. It appears, therefore, that Drs. Behring and Kitaisaio have an unquestionable right to the credit of having first introduced and successfully used the sero-therapeutic process in the treatment of disease.

On the other hand, it is incontrovertible that Drs. Roux and Martin, of the Pasteur Institute, were the first to treat diphtheria and croup with the antidiphtheritic serum, prepared according to Behring's method, and that, after many experiments, they found the horse to be the most suitable animal for supplying large quantities of the serum, and also the easiest animal on which to confer immunity. Let all the workers in this great conquest of science have their just dues. The field is large and as yet almost uncultivated. There are many other diseases upon which to experiment, and in connection therewith we may say of this valuable process, as Homer said of the future, " It is a child sleeping on the knees of the gods."

HAVRE, FRANCE, October 25, 1894.

THE NATURE OF IMMUNITY.—In a lecture delivered before the International Congress of Hygiene, Professor Buchner, of Munich, summarized his conclusions in regard to immunity and immunization. Natural and acquired immunity he considered differed in principle. The natural power of resistance is due to the bactericidal influence of the alexines, certain dissolved constituents of the organism, and to a congenital power of resistance in the tissues and cells of the body. The leucocytes play an important part in this natural protection, not through phagocytosis, but by means of dissolved substances they secrete. The immunity artificially acquired or the immunity acquired in later life is due to the presence of modified bacterial products—the antitoxines. The action of the antitoxines is not directly upon bacterial products, but by modifying the organism these enable it to resist specific poisons. This is essentially the doctrine most prevalent.—*Physician and Surgeon.*

THE EXAMINATION OF THE MILK SUPPLY FOR TUBERCULOSIS IN THE STATE OF NEW YORK.

PAPER READ AT THE MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION, AT MONTREAL, SEPTEMBER 26TH, 1894.

By F. O. DONOHUE, M.D., President New York State Board of Health, and Secretary New York State Tuberculosis Commission.

AMONG the important functions of the State is that of protecting the people from the invasion of infectious diseases. This is a moral duty as well as a principle of polity in all civilized countries.

Statutory enactments for the protection of the public have up to within a short period been confined to quarantine, disinfection, drainage, and the protection of potable waters from pollution through the agencies of boards of health.

In May, 1892, New York State took a step forward in authorizing its Board of Health to make investigations in reference to the existence of tuberculosis in cattle. Whether the State of New York should undertake such a function of protecting its people from a disease which is greatest in its mortality list is a question of political economy which, as far as the State is concerned, as shown by the State Board of Health, and latterly by the Tuberculosis Commission of the State of New York, must be answered in the affirmative.

The relation of the milk supply to infant mortality from tuberculosis is insisted upon by all health officers who have made it the subject of systematic observation. The statistical proof is almost the only proof that the nature of the case admits of. Animals have been experimentally infected with tuberculosis from milk infected by the bacillus, and to all minds capable of estimating the force of evidence, reasoning from analogy, the proof is conclusive.

To what extent the infection may occur from tuberculosis in domestic animals, especially milch cows, was thought by the State Board of Health of New York to be well worth study and investigation.

The question, which was the most likely source of infection in infants, causing such high mortality among them, was thought to be largely the milk supply. There is no difference of opinion now among medical men as to the communicability of tuberculosis from man to man or from animals to man. That milk and its product will convey it has been proven. When it is considered that milk is the principal aliment during childhood, and enters largely into the diet for all classes, it is a highly important question.

The statistics of New York show that for a period of eight years last past every eighth death was caused by tuberculosis. Practically no efficient measures were taken prior to this time to restrict its prevalence, and 12 per cent of our mortality is justly chargeable to it. No other single disease approaches this as a cause of mortality to the human family ; no epidemic, however dreadful, swells the death-list to such an extent.

The report of the New York State Board of Health for January, 1892, gives a total mortality of 17.42 per 1000 ; for all zymotic diseases, 3.23 ; for consumption, 1.9 ; and yet consumption is always and everywhere the result of a bacillus or germ, and this being the case, it is clearly amenable to restrictive measures and ultimately to complete extinction.

Prior to 1892 there was in existence in the State of New York no statute which gave authority to deal with the examination of cattle to determine the existence of tuberculosis, nor was any other State or country engaged in the examination of dairies for tuberculosis with the authority of statutory enactment. There was, therefore, no precedent to follow. It is true that boards of health have been empowered to seize and confiscate tuberculous meat and examine cattle at abattoirs for tuberculosis. The State Board of Health of New York desired further powers, and with the influence of the present Executive, Governor Flower, who took a deep interest in the matter, caused the passage of the act known as the " Tuberculosis Act." This act was passed and signed by the Governor in May, 1892, and authorized the State Board to inspect cattle within its boundaries, and cause any bovine animal found to be suffering from tuberculosis to be killed.

This law deals with the largest industry in the State of New York. The value of the live stock on farms in the State ex-

ceeds that of any other State in the Union. It is estimated that about $40,000,000 worth of milk and its product is consumed in New York State every year, and according to the census in 1890, there were nearly 2,000,000 milch cows in the State. It will be seen that the undertaking is a large one, but every work must have its beginning.

The proportion of bovine animals slaughtered for human food which are found to be suffering from tuberculosis varies greatly in different countries, owing, no doubt, to the standard of official inspection. The proportion of tuberculous to healthy bovine animals in 1891 was 6.3 per cent in the whole of Prussia and 12 per cent in Berlin alone. In France, on the other hand, the proportion of tuberculous bovine animals, according to official figures, was less than 1 per cent. Much of this discrepancy was doubtless proportional to the strictness of the examination.

As regards the conveyance of infection through meat, this has been abundantly proved. The field of infection is most likely to be the stomach, since recent investigations have shown that the bacilli of tuberculosis are destroyed by the sun's rays in a few hours. The danger of infection through the respiratory tract is, therefore, lessened. The broad fact is established that a tuberculous cow may give tuberculous milk, and will do so if her udder be affected, and if in a given case a tuberculous cow does not give infected milk, it is only a question of time when she will do so.

The State Board of Heath of New York began the examination of cattle for tuberculosis in Westchester County in August, 1892, by adopting the method known to physicians as "physical signs." The investigations were begun here, because the disease was known to exist in this vicinity. Advanced and well-marked cases were discovered and destroyed, but the Board and its inspectors were convinced that cases not well marked were left behind.

Soon after Dr. James Law, Professor of Veterinary Science in Cornell University, and now a member of the New York State Tuberculosis Commission, used Koch's tuberculin in making an inspection of several herds in Tompkins County. By the use of this agent he selected the diseased animals so accurately that the State Board of Health was convinced of

its value as a diagnostic agent. Others soon made use of this agent with corresponding results. The Board soon after adopted it after becoming convinced of its innocuousness in healthy animals, and finally no animal was condemned until tuberculin was exhibited.

During the following year and one half, with a nominal appropriation and a small corps of inspectors, the State Board of Health examined 22,000 cattle, and caused to be killed out of that number about 700. The major part of this work was done in the region known as the Hudson River District, where those large industries in the making of condensed milk are located.

The proportion of tuberculous animals to healthy ones, from these figures, if used as a basis of calculation for the entire State, would be misleading if taken without explanation. Most of these examinations were made in districts and among herds where the disease was known to exist, and the percentage of diseased animals found is far too high in estimating the State as a whole.

The work of the State Board of Health in this line met with opposition on the part of many dairymen, who suffered some pecuniary loss on account of the slaughter of their cattle, and no doubt by reason of the stigma which attached, on account of the publicity which was inevitable in the daily press of certain herds being examined by the State Board of Health ; and then, too, while compensation was allowed, so much delay was occasioned by the infrequent sittings of the State Board of Claims, which tribunal has the authority to adjudicate all claims for damages for the slaughter of diseased cattle.

Experience teaches that all innovations meet with opposition. Every disturbance in the equilibrium of time-honored ignorance is bound to meet with opposition ; nor was it to be expected that this line of investigation would be any exception to the rule ; moreover, as it disturbed a large industry and entailed pecuniary loss to the individual.

The matter became the subject of senatorial investigation during the past winter. The work of the State Board of Health was reviewed by a Senate investigating committee with much minuteness of detail. The Senate Committee,

after completing its investigation, recognized the fact that upon the report of the State Board of Health in the matter of tuberculosis the care of the public health was a part of the continuous duty of the State, and this work, based upon the facts submitted, was not a task to be taken up in a season and afterward laid aside.

The work of the State Board of Health, for the time under consideration, evolved the lesson that tuberculosis existed in the dairy cattle to quite an extent, and that special legislation was necessary to deal with it. The facts submitted were unanswerable arguments for creating a commission with authority to exercise continuous investigation. The recognition by the State of its duty of maintaining a department clothed with authority coincides with the next stage of evolution in the matter of the examination of the milk supply for tuberculosis. With the assistance of the present Executive, Governor Flower, who had been active in his support of the measure from the outset, a special commission was created for the continuance of this work on May 31st, 1894, with all the powers formerly possessed by the State Board of Health.

During the short time since the creation of this Commission it has carefully studied, by a system of special inspection, the prevalence and distribution of this disease, the stabling, mode of infection and local conditions, and the disposition of the dairy products, for the purpose of building up a knowledge of the existence and behavior of tuberculosis in cattle, and the work has gained new interest by the striking lessons drawn from field work among the dairies. This Commission has been engaged in the work of examinations for tuberculosis in the eastern, western, and central portions of the State, with the object of determining the distribution of the disease. The small appropriation placed at its disposal precludes the Commission from making anything like a complete examination of all the cattle in the State; its aim is rather to determine its prevalence and submit a report of its findings to the next Legislature in January. It is now engaged in the Mohawk Valley District, to determine the prevalence of the disease within a given area, and it is hoped a pretty just estimate can be made, taking this area as a basis for calculation.

The Commission in Tuberculosis in Cattle meets with no

antagonism now in its work, for two reasons: First, the people are becoming educated to the importance of the work; and, secondly, the owners of the cattle are compensated.

Before the cattle are destroyed, if found diseased by the Commission, appraisers are appointed, one by the Comptroller of the State and one by the owner of the condemned cattle. The animals are appraised at their sound value and are then slaughtered; an autopsy is held in each case, and if it be found that tuberculosis exists, the owner shall receive not more than $60 for a registered and not more than $25 for a grade animal; but the appraisal, in order to insure this amount, must be double the amount stipulated.

The fact that owners are compensated for the loss of their cattle encourages them in the work, and if in a given case suspicion of disease exists, the Commission is promptly notified.

In the work of eradication of the disease, owners of high-grade cattle are themselves making investigations, thereby avoiding the publicity which obtains in examinations by the State authorities.

A word as to the methods of examination. A careful history of the herd is first taken by the inspectors; the distinctive breed or breeds; if any animals have died within the past two years; and the disposition made of the milk and its product from the dairy; and if any additions have been made to the herd within the past three years, and from whom and where. Then the initial temperature is taken and carefully recorded. Tuberculin is then exhibited by hypodermic injection. If the American product be used, 30 minims of the undiluted tuberculin is injected in the cellular tissue; if the imported Koch's tuberculin be used, about 2 minims are injected, diluted. About nine hours after making the injection temperatures are again taken at intervals of every two hours for the next twelve hours. The febrile reaction in tuberculous cattle, following the subcutaneous injection, begins from six to ten hours after the injection, and it reaches the maximum in from nine to fifteen hours after the injection, and returns to the normal in from eighteen to twenty-six hours after the injection. A rise in the temperature on the day following the injection of 2° F. above the initial temperature should be regarded as an indication of tuberculosis.

The tuberculin test is not infallible. All the diagnostic powers of the veterinarian should be called into requisition in making up his opinion, although but few errors have been made under the direction of the State Board of Health, and none have been made by the Commission in Tuberculosis thus far, as shown by *post mortem* examinations.

One fact has been pretty thoroughly established, and that is that the tuberculin test cannot be relied upon in cattle that are advanced in gestation. These usually give a high reaction, which, if followed, is misleading.

The contagiousness of the disease is established beyond any doubt, for in most cases it can be traced from herd to herd. This has been especially noticed in localities where cattle owners deal with each other in the purchase of cattle from infected herds. In the investigations made it has not been found that any distinctive breed of cattle has immunity from tuberculosis. Grade cattle have been found to be as susceptible as any other variety.

The lesions discovered on *post mortem* examinations are variable, from small deposits of tubercles to quite generally disseminated lesions in the different viscera. In many instances the mammæ have been found the seat of the lesions. It would be interesting to make a microscopic examination of the milk from each cow suspected, but for obvious reasons this would be impracticable.

In the hands of the inspectors employed by the State Board of Health, and latterly by the Tuberculosis Commission, tuberculin has proven itself to be a valuable diagnostic agent. In many instances it has been noticed that cattle well nourished give high reactions, and upon condemnation, slaughter, and autopsy reveal lesions of tuberculosis.

In the very nature of things it must take time to eradicate this disease from the dairy cattle. It is confidently expected that future legislation will be enacted carrying with it an appropriation commensurate with the magnitude of the work.

Were the importance of human ailments measured by the standard of money, there would be small need of a protracted educational process before steps were demanded for checking our annual loss by tuberculosis; for the fact cannot be too strongly emphasized that the care of the public health is the chief duty of the State.

ADMINISTRATION OF THE MEDICAL LAW OF THE STATE OF NEW YORK.

SUMMARY OF REQUIREMENTS.

MEDICAL practice in the State of New York is regulated and administered under the provisions of Article VIII., Chapter XXV., of the General Laws, entitled "The Practice of Medicine." *

THREE SEPARATE STATE EXAMINING BOARDS.

Under the provisions of the medical law of New York, three separate State Boards of medical examiners are appointed by the Regents of the University, the appointees being selected from twice the number required, the names of such nominees having been previously presented by the three State medical societies respectively. The term of service is three years.

QUALIFICATIONS FOR PRACTICE.

Candidates, prior to an examination, are required to furnish the Regents with credible evidence showing:

1. That the applicant is of good moral character, and is more than twenty-one years of age.

2. Evidence of having received a preliminary education, the minimum standard being the following: A Regents' certificate of having passed an examination in arithmetic, elementary English, geography, spelling, United States history, English composition and physics, or an equivalent thereof. (The Regents may, in their discretion, substitute evidence of five or more years of reputable practice, provided such substitution be specified in the license.)

3. Proof of having studied medicine not less than three full years, including three satisfactory courses in three different academic years, in a medical school registered as maintaining at the time a satisfactory standard. (The Regents may, in their discretion, accept as a substitute, evidence of five or more years of reputable practice, provided such substitution be specified in the license.)

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* Chapter 661, Laws of 1893. Also known as "The Public Health Law."

4. Proof of having received the degree of bachelor or doctor of medicine from some registered medical school ; or a diploma or license conferring full right to practise medicine in some foreign country.

5. Payment of a fee of $25.

6. The candidate to specify *one* of the three examining boards before which an examination is desired.

After having complied with the foregoing requirements, the candidate is entitled to receive an order for an examination, and a notice of the time and place at which regular examinations are held. Six examinations are held annually, and are conducted simultaneously in New York City, Albany, Syracuse, and Buffalo.

7. Pass an examination conducted by one of the boards, in the seven principal departments of medicine—viz., anatomy, physiology, including hygiene, chemistry, surgery, obstetrics, pathology, including diagnosis, and therapeutics, including practice and *materia medica ;* the minimum rating in *each* department being 75 per cent.

In order that every candidate may receive an impartial examination, permission is given the candidate to appeal from the decision of a single examiner, in cases in which ratings fall below 75 per cent to the decision of the full board, in which case he has the advantage of a *majority* vote.

If by a majority vote his rating still falls below 75 per cent in case his rating in all the other six branches averages 80 per cent or higher, the candidate is entitled to a re-examination, within six months, in the *single* department in which he has failed.

If, however, he has failed in more than one department, and if his low standing is not raised by a majority of the full board to a 75 per cent rating, the candidate is at liberty, within one year, to ask for a re-examination before the same board, such re-examination to be in *all* the seven departments. In all cases of re-examinations, no additional fee is charged.

Candidates are known to the examiners only by number, the names of the candidates and sources of graduation being withheld until after their qualifications are determined.

8. Registration of the license, the registration fee being $1.

PENALTIES.

Unregistered practitioners are subjected to a fine of $50 for each offence, and for every day of such unlawful practice.

Unlicensed practitioners or those attempting to practise under a license fraudulently obtained, on conviction, are subject to a fine of $250 or imprisonment for six months for the first offence, and on a subsequent conviction, to a fine of $500 or imprisonment not less than one year, or to both fine and imprisonment.

RESULTS OF TWO YEARS OF ADMINISTRATION.

The result of two years of trial has very forcibly demonstrated the striking fact, that out of the *four hundred* graduates of medical colleges examined, *forty* were *grossly deficient* in medical learning.

A thorough canvass, conducted county by county, during 1893 by the Committee on Medical Legislation of the old-school State Medical Society, made the fact plain that more than *one fourth* of the registrations that had been entered during the year in the several counties were *invalid*, and that the parties were thereby attempting to *evade* the requirements of the medical law.

Copies of the Medical Act, and of sets of blanks to be filled by applicants for a license, will be furnished on application. Address, "Secretary of the Regents of the University, Albany, N. Y." H. M. PAINE, M.D.

ALBANY, N. Y., June, 1894.

EFFECT OF FILTRATION OF WATER SUPPLY.—The beneficial effects of filtration seem to be strikingly shown by the experience of Girard College, Philadelphia. This is located in the district which has been for some years supplied by direct pumpage—that is, the Schuylkill water is thrown directly into the pipes. The typhoid death-rate for 1893 was quite high in that district, although apart from the bad water the sanitary conditions are very favorable. At Girard College, however, there is but little of the fever in a population of over fifteen hundred. All the water supplied to the institution is thoroughly filtered.—*Medical News.*

"DRINKING-WATER IN ITS RELATION TO MALARIAL DISEASES."

A PAPER READ AT THE SALISBURY HEALTH CONFERENCE, N. C., BY RICHARD H. LEWIS, M.D., OF RALEIGH, SECRETARY OF THE NORTH CAROLINA BOARD OF HEALTH.

MANY years ago the writer of this paper, before he had heard or read anything suggesting or supporting the view that malarial diseases were introduced into the system through the medium of drinking-water, had his attention called to it in a striking manner by a statement of facts on the part of a relative living in one of our Eastern towns.

The statement was that in her father's family, comprising so many persons who drank cistern water, malarial diseases were unknown, while in that of their next-door neighbor, consisting of exactly the same number of adults and children who drank from "the best well in town," they were rarely absent. My attention having thus been directed to the matter, it was not long before the opinion, which was confirmed by other evidence of a similar character, became a conviction, and for years I have not had a doubt that drinking-water was one of the principal, if not the chief one of the avenues by which the malarial poison obtained an entry into the human system. Until quite recently the opinion almost universally held was that it was introduced through the air only. The very name *malaria*, or bad air, is significant of that view. There is no question that the poison does exist in the air of warm climates in certain localities, especially in low, wet soils loaded with decaying vegetable matter, or in other localities not so low, but where the subsoil water is near the surface; that it is most abundant at night, particularly in the air nearest the ground, and that it is breathed in through the lungs.

As to the nature of the poison many theories have been promulgated. Up to 1866 the universally accepted opinion was that it was gaseous in character. In that year Dr. Salisbury, of Cincinnati, O., announced the discovery of an *alga*, or small water plant, which he assigned as the cause of mala-

rial-fever. While his conclusions were not generally accepted, inquiry on that line was stimulated, and from time to time various microscopic organisms were suggested as the cause, none of which, however, stood the test of experiment. But "in 1881 Laveran claimed to have discovered in the blood of malarious subjects, in connection with the red corpuscles, rapidly moving filamented spherical organisms of about the same diameter as the corpuscles. . . . Many investigators who have followed in Laveran's track have corroborated his testimony, and hence there is a growing consensus of opinion that malaria is due to the introduction of *plasmodium malariæ* into the system; that it attacks the red blood corpuscles, lives and grows within them, and finally disintegrates them" —the explanation, by the way, of the familiar fact that the subjects of chronic malaria are always very pale and bloodless. Since the above was written (in 1892) favorable evidence has accumulated, and it is now generally believed that this little blood parasite—this microscopic vampire, so to speak—is the cause of this kind of diseases.

Now, is this poison carried in water? That is the question before us. That it is a fact I have not a doubt, and my aim and hope is to prove it so completely to the satisfaction of our people residing in malarious districts, as to induce them to seek such a water supply as cannot be contaminated by it. As the Executive Health Officer of the State, I feel sure that in no other direction can larger results in the way of preventing sickness be obtained than by bringing about a change in the family water supply from the ordinary surface well, almost universally used at present in the eastern part of our State, to *deep* driven, or bored wells, or, still better, cisterns.

Appreciating and endorsing the sentiment expressed in a favorite saying of one of my former teachers, that he "would not give one bare-faced, bald-headed *fact* for all the theory in the world," and realizing how much more effective an argument in the concrete, as it were, is than in the abstract, it is my purpose to attempt to make the demonstration, not by a process of abstract reasoning, but by the citation of well-authenticated facts, first as set forth in the writings of others; and, secondly and chiefly, as they appear in letters from our own "home folks" giving their personal experience.

As long as the gaseous theory prevailed it was natural that the water-transmission of the poison should not have suggested itself; but as soon as it was shown to be a solid, that view was brought forward, and first, so far as I know, by Laveran himself. The conclusions arrived at by him on this subject are: "There have been observed cases in which, in the same locality, persons living in identical conditions, but using drinking-water from different sources, the one group being attacked in a large proportion, while the other group of persons are scarcely affected at all.

"2. In certain otherwise unhealthy localities the paludal fevers have been seen to disappear by supplying pure drinking-water instead of the previously used stagnant waters.

"3. In localities otherwise healthy one can contract intermittent-fever by drinking water from an unhealthy locality. The persons most affected are those who drink the water most freely.

"4. Travellers in malarial countries have found that on boiling their drinking-water they escape the disease in a large proportion of cases."

Dr. H. Martyn Clark, of the city of Amritsar, India, in a most interesting paper read before the Scottish Geographical Society in April, 1892, says: "The malarial poison is usually breathed into the system, but it is, in my opinion, quite as commonly imbibed. Water is contaminated in two ways: either by the power it has of absorbing malaria which passes over its surface, or, in the case of wells, through the subsoil water. . . . In 1884 a party of workmen sent to repair a bridge over the Chuka drank of this stream, and out of thirty only three escaped fever, while several of them died."

In the article on "Malaria," page 350, Vol. II., of Stevenson and Murphy's "Treatise on Hygiene," 1893, the following case recorded by Boudin is quoted: "One hundred and twenty soldiers embarked in the *Argo* for transport from Bona, in Algiers, to Marseilles. During the voyage one hundred and eleven of them, thirteen of whom died, suffered from different forms of malarial-fever. Two other vessels, carrying between them six hundred and eighty soldiers, also from Bona, and arriving at Marseilles the same day as the *Argo*, had no cases of illness at all, and the only ascertainable differ-

ence of circumstance between the troops in these ships and those in the *Argo* was the difference of drinking-water. The latter were exceptionally supplied with water, which was said to have an unpleasant smell and taste, from a marsh near Bona; those on the other ships were supplied with good water. Finally the nine soldiers on the *Argo* who escaped were said to have purchased wholesome water from the crew of that vessel."

In an article by Dr. Bartley, on the "Relation of Water to Paludal Poisoning," in the *Brooklyn Medical Journal*, and republished in the *North Carolina Medical Journal* for February, 1893, these cases are quoted: "The villages of Warrington and Woolsey, in Florida, had been considered healthy places up to 1872. After that they became very malarious. Previous to that date almost the whole water supply had been from a spring of pure water. About 1872 driven wells became popular, as water could be had at a depth of a *few feet* (italics mine), and most of the residents had their own wells. From this time malaria became very prevalent, and it is believed from the change in the water supply." Again: "In January, 1866, a company of forty healthy marines were sent to the Navy Yard of Pensacola, Fla. During the first year frequent attacks of malaria began to show themselves among these men, which increased in number during the second year, and during the third year the disease became so prevalent that before August twenty-five of the party were in the hospital at one time. During this year they were so broken down that they were all sent to Norfolk, Va., where they all recovered. These marines drank the water from a driven well at the yard. The officers and their families drank only from a cistern, and no case of malaria appeared among them, proving that the wells were probably the cause of the sickness among the marines." Dr. Bartley also quotes this from THE SANITARIAN 1892: "In 1875 the Naval Hospital at Pensacola was rebuilt. It proved to be a very unhealthy place, malarial diseases being very commonly contracted by patients and all others who came there. This continued until 1890. At this time there was a change in the water supply. A cistern was constructed, and the use of well-water from the driven wells was abandoned, with the cessation of malarial attacks. The

soil at the location of the hospital is composed of a sandy top with a swampy marl underneath. This peaty soil contains organic matter, and in some way produced these diseases." Likewise this: "In the report of the Marine Hospital Service for 1890, page 12, signed by Surgeon-General Hamilton, he says: 'The experience of the past year confirms the previous statement that malarial diseases are contracted through the medium of food and drinking-water.'"

In the April number of the *Southern States* there appeared a very interesting article by Mr. James R. Randall on "Malaria Superstition and the Water Problem." While not prepared to indorse Mr. Randall in the opinion that the malarial poison is not introduced into the system at all through the air, but through the drinking-water *only*, I am much pleased to quote, in part, his statement of facts. He says: "A large part of Southwestern Georgia was a pest-hole. It was proverbial for chill and fever—generally styled malarial-fever—hæmorrhagic-fever, and a variety of choleraic symptoms. Mr. Fort by experiment disclosed that Southwestern Georgia was in the artesian basin, and that, by boring about six hundred feet below the surface, flowing wells or energetic geysers were easily developed. As these splendid fountains of pure water were commonly utilized, there was an instant, a magical change of sanitary character in that region. The diseases hitherto ascribed to the air vanished, and that section of the State became a sanitarium, the healthiest of localities. The old conditions of environment remained, but the mutation was in the water supply. The man who with this object-lesson before him still clings to malaria may exist, even in the artesian region of Southwestern Georgia, but he is a veritable dweller in the cave of Adullam, and with some brethren an ancient superstition of this character dies hard and lingeringly.

"At several places in South Carolina, as well as in Georgia, the most wonderful results have followed from the introduction of artesian water. Yemassee, in the rice country, long regarded as a death-trap, became exceptionally salubrious, and its water was in request all around. Langley, S. C., a manufacturing village, had an evil repute for 'malarial' fevers. The cotton mill there sometimes closed on account of sickness among operatives, and was habitually crippled.

So soon as the surface wells were discarded and water obtained from a natural geyser, a boiling spring in the vicinity, there was an astonishing metamorphosis. The place became noted for health; the factory was always full-manned. Its stock improved in price; dividends were regularly paid; and out of reserve funds the capacity of the concern was nearly doubled. It was with great difficulty that the managers were convinced that it was surface water and not the atmosphere that had previously wrought such disaster.

"On swamp plantations, where since the beginning of the century disease and death from fever raged, artesian water performed its usual prodigies for white and black. On a plantation near Augusta, where the white people used this water and the negroes insisted upon drinking from surface wells, the contrast was marked. The whites had uncommon freedom from malady and enjoyed splendid health, while the negroes were constantly sick."

I would call attention just here to the fact, accepted among scientific observers, that the negro races are less susceptible to malaria than the white races, which makes the illustration given still stronger. Mr. Randall goes on to add: "It was demonstrated on these places that the swamp air is as pure as the mountain-top," a conclusion, however, that no one familiar with the literature of malaria can accept—yet awhile, at any rate.

The following, from an article by Dr. W. H. Daly, of Pittsburg, Pa., in the *Medical Record* of September 15th, is extremely valuable, as coming from an unacclimated physician exposed to the conditions most likely to cause malaria:

"Observations and studies on the subject, and investigations made in various districts from Manitoba to Louisiana, and all along the southern coast of the Atlantic Ocean, and of Cuba, Yucatan, and other districts in Mexico, lead the writer to the conclusions that so-called malarial disease is not easily, if at all, contracted by inhaling so-called malaria or bad air of the low, swampy, or new lands, but it is distinctly, if not almost exclusively, due to drinking-water that has come into contact with and become infected with the malaria germs or infusoria that exist in the earth and waters of the swamp and lowlands. This germ does not ordinarily, if at all, float in

the air during the day, nor does it find easily a vehicle in the fog or vapors of the night. . . .

"I am fully aware that in taking the ground I here occupy I may be considered to be too radical, and that my position may be regarded as untenable. If so, I can only answer that every observing medical man must and is bound to tell honestly and fairly what he has gathered from his own experience, observation, and studies, and it must be considered that my observations have been prolonged, extensive, and fairly intelligent, and made not, so to speak, second-hand, but personally and upon the ground in districts distinctly malarial, and that during the years that I and others had been careful to avoid the mists and fogs of the malarial regions, as well as the out-door night air, but all the while using the surface, swamp, or shallow well-waters for drinking, I, as well as others of my friends, suffered from malaria, so called; but later on, and during the past twelve years, while abstaining from drinking the surface or well-water, and with the utmost freedom of exposure to the out-door night air, fogs, rain, and mists at all times, night and day, we have enjoyed complete immunity.

"Whoever has shot wild fowl knows full well that the best opportunities come to a sportsman amid storm and rain, with the early mists of the morning, and when the marshes are redolent with the vapors of the evening, just at nightfall, when the wild fowl are flying to and fro, seeking their favorite haunts in the marshes to sleep.

"Then there is the journey of miles homeward to the club-house, farm-house, or camp, in the small ducking-boat, that brings one to the fireside possibly not earlier than eight to ten o'clock at night, so that exposure is positive, and close to the marsh and water as one is sitting in a small boat.

"I mention the foregoing as relevant, since medical men are still the readers and learners from the classic text-books of Watson, Tanner, and Niemeyer, not to speak of many others."

Remembering how very conservative a rural population always is, and how suspicious and sceptical a great many of them are of statements printed in a book, particularly when those statements set forth views that they are loath to accept, and are made by strangers living a long way off, I concluded

that it would be best to obtain the bulk of the evidence from our own people. With that end in view the following circular letter was sent to every registered physician in all the counties considered malarial:

NORTH CAROLINA BOARD OF HEALTH, RALEIGH, N. C., April 20, 1894.

DEAR DOCTOR: The evidence that malarial diseases are introduced into the system in many, if not most instances, through the medium of drinking-water is, to my mind, conclusive. The water containing the germs of plasmodia is surface or superficial soil water. Those living in malarial districts who confine themselves to water from cisterns or wells driven or bored beneath the stratum of marl or impervious clay—in other words, beyond the water which soaks down from the surface—are to a large extent free from attacks. If the people of our eastern counties could be generally convinced of this fact, and thereby induced to act upon it, the health conditions of that really fine section would be revolutionized for the better. To bring this about is the object of the Board of Health. In order to do this facts must be presented to them in the concrete—not by illustrations from "Asia and Spasia and t'other side o' Hillsborough," so to speak, but by instances from among their own neighbors. I write to ask if you know any facts bearing on this subject, and, if so, that you will write them to me in detail at your earliest convenience. Give the name and post-office of the head of the family having the experience. If not personally familiar with the facts, send me the name and address that I may write him direct.

Your kind and prompt attention will greatly oblige,

Yours truly,

RICHARD H. LEWIS,

Secretary.

To this forty-two replies were received, seven of which, having no special bearing on the point at issue, have not been used. Not being satisfied entirely with the evidence thus obtained, and desiring particularly to have, as far as possible, specific, detailed statements of actual personal experience, I sent the following circular letter to every one using cistern or driven well-water whose address I could get.

NORTH CAROLINA BOARD OF HEALTH, RALEIGH, N. C., August 1, 1894.

MY DEAR SIR: The State Board of Health is investigating the question of the introduction into the system of the malarial poison through the medium of the drinking-water. We believe that there is much evidence to prove that persons drinking water, from cisterns especially, and also from wells bored or driven below the impervious layer of clay or marl, are less subject to malarial diseases than those drinking from shallow wells.

If this fact can be demonstrated upon "home-spun evidence," by a statement in detail of the experience of our own people, which would make a deeper impression than that from foreign parts, we hope, by disseminating this evidence widely among the residents of the malarious regions of our State, to so augment the use of the purer waters as to revolutionize their health records.

We believe it can be done, but we must have a detailed statement of the evidence. For example, something after this sort: "Up to date my family used water from a well (describe well), and we had cases of malarial disease (or our doctor's bill—for malarial diseases chiefly—was). Since that time we have been drinking cistern (or driven well) water, and the attacks of malaria (or doctor's bill) have been so and so."

Your name has been handed to the undersigned as one who has probably had such an experience. Will you not, in the interest of the health of your neighbors and the material prosperity of our State, *promptly* transmit it?—to

Yours truly,

RICHARD H. LEWIS,
Secretary.

To this thirty-seven replies were received.

In order to give a general idea of the drift of the letters from both sources I have classified them under the following heads:

	Medical.	Lay.
Favorable	10	22
Unfavorable	1	4
Indifferent, but generally favorable rather than otherwise	31	11

LETTERS FROM PHYSICIANS.

In order to save space, the irrelevant portions of the letters following have been omitted.

Dr. Will J. Gilbert, Mill Prong, Robeson County.—"Your circular received. Very glad indeed to see the interest taken in drinking-water as medium of malarial disease. I have been in the northeastern portion of Robeson County for the last five years. First two years had much malarial trouble to treat; since then, up to present time, have had comparatively none, due entirely to the use of *driven wells*, ranging from twenty to thirty feet in depth. Among many instances I could quote one family. Mr. Stephen Thrower's suffered greatly, his bill averaging high up, with narrow escape of his sick from death. I had to interdict the use of well-water or to have the same boiled before marked improvement became noticeable. I pleaded with Mr. Thrower to get a driven well, and assured him of perfect immunity from future trouble and expense. He did so, and now, instead of monthly visits and big bills, I am never called save occasionally in trivial troubles. Again, Hon. D. P. McEachin's family experienced the same benefit, also the families of Hon. Ed. Purcell, Mr. T. I. McNeill, Mr. Natt McPhauls, Mr. Lige Gibson, Mr. J. B. Weatherby, and many others. One noticeable case few months back: Wife and children and father suffering from malarial ills near the Cumberland County line, medicines affording but temporary relief—cases chronic and office patients. Upon my first visit I visited his well, and found his water polluted by the nastiness of his yard, foul in smell, of bitter taste, and milky in color. I called Mr. Graham's attention to the source of his troubles. He had a driven well put in use at once, and to-day the sallow, dejected, woebegone patients are bright, with buoyant spirits, good appetites, clear, healthy skin, under pure water and precious little physic. I venture the assertion that the driven wells in Robeson County have saved thousands of dollars and many lives since their introduction. One case near Fremont, Wayne County: Mr. M. T. Johnson before the driven wells had much malaria; since the use of water from his driven well no malarial troubles. I could give you much personal experience as practising physician of eighteen years in Eastern North Carolina and this

section, as to the marked benefit to health from change to drinking-water from driven wells. Facts sustain your reasoning.

"One more case sustaining your reasoning: At the John Gilchrist place, in the county of Robeson, occupied in 1889 and 1890 by Mr. Archie McQueen, wife, and seven children, malarial-fever of malignant type prevailed; four of family sick; duration of attacks, six to eight weeks; visits every day; every sanitary measure exercised; water from well boiled; patients recovered, to be taken again every fall; father not disposed to have a driven well, and the place finally abandoned. From the great amount of sickness of this family and the death of a Mr. McLeod, who moved in after the McQueens left, the place was looked upon as a graveyard, and a party from South Carolina—one Mr. Quick—being offered the place at a low price declined to purchase before consulting me as to the health surroundings. Mr. Quick, wife, and one child now occupy the place, and enjoy freedom from malarial troubles by virtue of the driven well used at my suggestion. So it is all over this section. Where the driven well is used there is no sickness from malaria."

Dr. Samuel Morril, Farmville, Pitt County.—"Your circular of April 20th received. In the section of country I travel over open wells are the rule. Driven wells are now being used to some extent, with improvement of quality of water and general health. I have been urging this matter personally for some years. B. M. Lewis, P. O. Dongola, N. C., congratulated himself that the year after he bored a well his doctor's bill was less than it had been in years.

"John T. Barrett, Farmville, N. C., is, or was, enthusiastic on the subject of driven wells, and undoubtedly there has been less malarial trouble in his family.

"Sufficient time has not passed in other cases to prove anything—less than a year only since commencing their use."

Dr. W. W. Lane, Wilmington, N. C.—"In regard to your remarks on the production of malarial diseases from the use of surface water, which includes our shallow wells, as well as branch or ditch water, you are certainly correct. I have made many observations concerning this question during my past life, and have been long thoroughly convinced that surface

water drinking plays a far greater part than climatic influence in causing malarial-fever, as well as many of our hepatic troubles, including obstruction, jaundice, colic, congestion of the liver, etc."

Dr. J. F. Garrenton, Coinjock, Currituck County.—"I agree with you as to surface water, etc. I believe that three fourths of the diseases in this low, flat country are produced by malarial poison; and most of it is taken into the system by drinking-water (surface water). I have a well or pump driven twenty-seven and one half feet deep, and there are no malarial diseases in my family. Cisterns will not do unless they are perfectly tight, and no water exposed to the air in any open vessel or well in this country is fit to drink, for it will absorb malarial poison."

Dr. A. B. Pierce, Weldon, Halifax County.—"While I cannot call to mind any particular locality affected to any considerable extent by surface water, as the cause of malarial diseases, yet I agree with you, and give it as my opinion, after an observation of fifty years, that surface water, as a drink, is the fruitful source of much of the malarial trouble of malarial districts. As an instance: In the region of country in the lower part of this county and the counties adjacent the wells are very shallow, and the drinking-water must more or less partake of the surface water, as in a great many of the wells the water is but a few feet from the surface. It is my observation that regions of country thus situated are subject to a great extent to malarial troubles.

"As another instance of the opposite of this, the wells in the section around Weldon are generally very deep, and but little or no surface water has an opportunity to vitiate the water. The wells are mostly bored or otherwise protected from the surface water. Since the town has been drained in the last twelve or fifteen years I suppose that we have as little malarial trouble as any section of North Carolina; and I attribute its exemption from malarial disease to cistern water, bored wells, and wells protected from the surface water."

Dr. Alpheus Fields, Aurora, Beaufort County.—"After an experience covering seven years I must say that I am of the same opinion as yourself respecting the development of all

malarial troubles. Filtered rain-water, well-drained and well-*whitewashed* premises are in almost all cases sure malarial preventives."

Dr. Thomas M. White, Belvidere, Perquimans County.—"I am interested in the subject of which you write. The inhabitants of this little village abandoned their wells as the principal source of drinking-water about ten years ago. The health of the inhabitants has materially improved since they have been using cistern water. If there was no other source from which they could get water the results would be more perfect and I am sure better."

Dr. George N. Ennett, Beaufort, Carteret County.—"Since the introduction in many localities of long-pipe driven wells malarial troubles have greatly diminished."

Dr. L. L. Staton, Tarborough, Edgecombe County.—"My attention has for years been in the direction of the supply of drinking-water. A few years ago I came in possession of a farm with a mill-pond on it, and with the reputation usual to such localities of being very unhealthy. After owning it for a year I found that malaria abounded. I had all the open wells filled, and, there being several good springs on the place, the filling of the wells necessitated the use of the spring water. The malarial diseases were very much lessened, and continued to grow less from year to year, until the miller reopened a well for his own convenience, but against orders, and but a short time after his very large family was sick from malaria. Upon refilling the well the malaria soon disappeared.

"In building a cotton-oil mill on the place, so much impressed were the proprietors with the danger of malaria from open wells that a cistern was built. It has been my universal advice in practice to suggest a cistern, and next to that a driven pipe; and in all cases where the cistern has been built and kept in proper condition, the malarial troubles have been greatly reduced, and, in some instances, entirely disappeared.

"At first the driven wells seem to have a beneficial effect, but after a while they are infected. My observation is that the neighboring farms have much more malaria than the farm alluded to. The amount paid for medical attention on the farm has been decreased at least one half from former years, notwithstanding the number of laborers has been doubled.

"Good and properly prepared food and pure water will, in my opinion, effectually stamp out all malarial diseases in Eastern North Carolina."

Dr. W. H. L. Goodman, Franklin, Va.—"I came to this place in 1865, and resumed the practice of medicine. I found malarial diseases very prevalent; in fact, from that time up to 1887 our people suffered greatly from chills and other malarial troubles. In 1887 the first artesian well was put down, from which we received a supply of excellent drinking-water, which at once took the place of the old surface wells; and a decided improvement in the health of the entire community was immediately noticeable. This well was followed by others, and we now have twenty-five in number, each averaging a flow of fifteen gallons per minute, or a grand total of over five hundred thousand gallons every twenty-four hours. Since 1887 the population of Franklin has doubled, and malarial troubles are almost entirely unknown. The general health of our town is excellent. Our wells average one hundred and forty feet in depth, and the temperature of the water is 60°."

FROM OTHERS THAN PHYSICIANS—THOSE USING CISTERNS.

His Excellency, Governor Carr, Old Sparta, Edgecombe County.—"There is no question in my mind as to marked improvement in the health of those using cistern over those using water from the open wells."

Hon. George H. Brown, Jr., Washington, Beaufort County.—"There has been a very marked improvement in the health of families using cisterns."

Mr. W. P. Baugham, Washington, Beaufort County.—"My family use cistern water altogether, and we never have any sickness at all. I agree with you that the shallow well which takes the surface water does the work, and so few of them arranged to let rain-water drain off from them. I have known them to allow rain-water to run in and fill well. We never use a physician for sickness such as you name."

Mr. David Pender, Tarborough, Edgecombe County.—"In 1859 I built a comfortable home in Tarborough, and for eight years my family frequently had chills and fever. Dr. Pittman, our family physician, stated to me that the use of cistern water was the only cure for our ills. I had a cistern made

immediately, and for more than fifteen years we had no fever whatever.

"Six years ago I rented my home to a large Jewish family, who have just informed me that they had no fever during the six years.

"We use cistern water in our store, and not a single case of fever for years among our employés. I have boarded at Hotel Farrar for six years; we drink cistern water, and scarcely a case of fever in the hotel during the six years."

Mr. John F. Shackleford, Tarborough, Edgecombe County.—"At home we use cistern water entirely, and have cistern thoroughly cleaned out every November, and catch no water after March 30th. Have never had a case of malarial-fever on the lot.

"At my mills we worked one hundred and twenty hands, and used well and spring water, and had a great many cases of typhoid-fever and dysentery, so serious that I had a driven well, about ninety feet, put down, and got good water, and the result was, have had little or no sickness since."

Mr. L. Heilbroner, Tarborough, Edgecombe County.—"I have been a resident of this place since 1868, have resided in three different localities of the town, and prior to the fall of 1891 my family used drinking-water from wells not over twenty feet deep. Up to 1891 we rarely escaped malaria, and had three cases of typhoid-fever, one of which terminated fatally. As a result my yearly doctor's bills were very heavy, as we had malaria every year. In the fall of 1891 I built a cistern, and I am happy to state since that time scarcely any member of my numerous family has had a chill, and my doctor's bills from that source are comparatively nothing."

Hon. Kemp P. Battle, State University, Chapel Hill.—"In regard to the drinking-water and malaria question I am able to make the following contribution. The late Mr. Paul C. Cameron, an observant and accurate man, and a very wise manager of slaves, told me that he and the Hon. John Y. Mason, of Virginia, bought adjoining plantations on the Mississippi River and removed many slaves to them from North Carolina and Virginia at the same time. He (Cameron) provided tanks and rain-water, while Mr. Mason did not. The result was that the Cameron negroes were as healthy as

in North Carolina, while the Mason colony suffered greatly from malaria."

Mr. George A. Spencer, Washington, Beaufort County.—"Up to the year 1887 we used well-water in our family—that is, we used it for about seven years previous to that time, and during that time we had four cases of typhoid-fever in our family besides cases of malaria. Our doctor's bill during that time was near one thousand dollars. Since that time we have been using cistern water, and our general health has been very *good* and our doctor's bills have been very *small.* The wells we used water from were surface wells. It is our opinion that the water we used at that time had a great deal to do with our health."

Mr. J. B. Whitehurst, Aurora, Beaufort County.—"Up to March, 1890, my family used well-water, and my doctor's bill was from $60 to $130 per year. Since March, 1890, we have used cistern water. I have not paid $50 doctor's bill in three and one half years. I lost three children up to 1890, and I carried my family to the sea-coast. Since 1890 my family has remained at home and had no need to go off for health. Encourage all to have cisterns. I speak from experience."

Mr. J. A. Perry, Scotland Neck, Halifax County.—"I have long since been satisfied in my own mind that more malarial poison is taken into the system in drinking-water than in any other way. It was fully demonstrated during five years' residence in Beaufort County in this State. I bought a farm in Beaufort County, on the Pamlico River, about two miles below Bath Creek. There were three wells on the place from which water was used by the occupants for all purposes. The wells were about ten feet deep. After taking possession of the place I learned from the neighbors that it was considered a very sickly place, and that the family which occupied it the year before (1869) lost five children during that year (which statement was correct) from fever. I had a good cistern built before I took my family there, which was in November, 1870. I carried my wife and four chidren there, lived there until January, 1876, when I left with six children and wife, all in good health. We had no serious sickness while there, and my doctor's bills did not average $10 per year exclusive of midwifery fees (having two children born there). There was

one death only during the five years, and that was a negro woman, who died of consumption. Besides my white family there were about twenty negro hands on the place, all of whom I required to use water for drinking and cooking from the cistern, which was a very large one. My neighbors had as much sickness as they had had before I went there, and it was constantly remarked by them that I had no sickness on my place.

"I have frequently heard Drs. McDonald and Taylor (both now dead) say that just after the war, in their practice in Washington, Beaufort County, when the citizens began to build cisterns the doctors' bills in the families who used cistern water decreased very much, and was very decided as soon as a family would make the change. I have heard Dr. John Blount, of Washington, who is now living, make the same statement."

Hon. W. D. Pruden, Edenton, Chowan County.—"My experience and observation have been most satisfactory and convincing of the good effect of cisterns upon the health of those who use them here. Prior to 1883 my family used water from an open well in my yard, which was carefully looked after, and was certainly equal to any other in the community. In 1883 I built a cistern, and we have constantly used water from it since, and I am satisfied that sickness in my family has been reduced one half. There is no other cause for it known to me except the change in water. Malarial sickness with us now is rare. My neighbors who have used cistern water have, I believe, had a like experience. Cisterns have largely increased in our town, and the health of our people correspondingly improved.

"Many of our people use driven wells, which are also beneficial, though not as much so, I think, as cisterns. The pipe is small and largely excludes surface water."

Mr. I. M. Thompson, Southport, Brunswick County.—"I have been living in my present quarters thirty years, and have used cistern water, and have never had a case of fever in my family of nine grown children, while those in the house twenty feet from mine, and others on the same block, using pump-water from pipes running down ten or fifteen feet, have attacks of malarial-fever every summer. I was married to my present

wife seven years ago. She weighed one hundred and twenty pounds, had always drunk shallow well or pump-water, and was full of malaria, which developed into a case of fever soon after she came here. Since her system was cleared and she has been drinking cistern water she is perfectly healthy and weighs one hundred and seventy pounds.

"There are only four cisterns in this town, and to my knowledge there has never been a case of fever in any of the houses where they are. I am delighted that you are agitating the question, have always been interested in it, and hope your 'efforts to revolutionize the health records' will meet with success."

THOSE USING DRIVEN WELLS.

"*Hon. Thomas G. Skinner, Hertford, Perquimans County.*—"I used spring and well-water in my family up to the year 1887, and my medical account was large every year. Since then I have used water from a driven pump—forty-five feet deep—and we have no fever, and my doctor's bill is only nominal."

Mr. C. W. Morgan, Hertford, Perquimans County.—"I have been using water in my family from a driven pump thirty-eight feet under ground for nearly five years, and during that time we have had no malaria or chills in our family. I think the driven pump excellent for health in this malarial section."

Mr. Timothy Morgan, Hertfort, Perquimans County.—"When driven pumps were first introduced into this section they proved a perfect failure, because no one thought of driving more than ten feet, and seldom that far. Of course that gave us the same water that our wells afforded, and, besides, the excavation made at the bottom of the pipe was constantly caving in and keeping water always muddy. I had always used well or spring water up to that time, and while I was very anxious to have a pump, I saw no improvement save convenience. I therefore continued to use well-water. I do not remember the exact time when I had my pump driven, nor could I give you any definite figure as to doctors' bills up to purchase of pump, but this I do know, that since I have been using it we have had little or no malarial sickness, and

we prefer the water to any attainable here. I think I have been using pump about eight years. It is forty-seven feet deep. I would not be without it for ten times its cost."

Mr. M. H. White, Hertford, Perquimans County.—"In my opinion the driven wells have done more to benefit the health of this community than anything I have ever known."

Mr. George D. Newby, Hertford, Perquimans County.—"We have been using the driven wells about eight years, and think they have improved the health of this place (Hertford) at least 50 per cent. Before that time we used wells about eight or ten feet deep."

Mr. L. W. McMullan, Hertford, Perquimans County.—"From 1865 to 1884 I used water from surface wells, from nine to twelve feet deep. My doctor's bill for that period averaged $100 per annum, mostly for malarial diseases. Since 1884 I have been using water from driven pump—forty-five feet deep—and during the ten years my doctor's bill has been less than $20 average per annum, and very little of that amount has been on account of sickness from malarial causes. It is exceedingly rare that any of my family (wife and four children) have had chills and fever since 1884. Before that time every member of the family had chills and fever often. I believe our improved health is due entirely to purer water."

Mr. Joseph White, Winfall, Perquimans County.—"We have used the driven well or pump in our town for five years, and since its use have realized a great *improvement in the health* of our town. I remember the year before I began the use of water from the pump, which is seventy-three feet deep, my doctor's bill was $100; since then, for four years, my medical bills have averaged from $15 to $20 per year, and but little of this expense accrued from malarial influence. I feel confident my pump—the use of its water—has saved me $150 in the last four years. All the doctors heartily recommend them."

Mr. Henry S. Bunn, Dochead, Edgecombe County.—"I have lived at my present home about twenty years, drinking water from a common well-curbed with cypress gum to the depth of eighteen or twenty feet. This being a malarial country, chills were no strangers to us; but last winter and spring they came with unusual frequency and severity. I became sus-

picious of my well, and on June 8th last I put down a common iron pump, and since that time don't think we have had a regular malarial chill. Certain it is that there has been not to exceed forty grains of quinine taken by us from June 8th to date (August 26th), but for five months prior to that time we used one ounce of quinine a week. I think the change entirely due to the healthfulness of the water. The pump is invaluable in this section."

Mr. S. E. Thrower, Melrose, Robeson County.—"I have been here about twelve years, and had a well that I thought was good water, and my doctor's bill ranged from $10 to $25 every year. Our family doctor said the water was not good. I thought he was mistaken, but he told me to get a pump. I got one and drove it down thirteen years ago, and I have not had a doctor since for malarial poison. I think a pump is the greatest thing on earth. Dr. W. J. Gilbert is the man that recommended the pump."

Mr. C. A. Holland, Maxton, Richmond County.—"Your circular letter of August 1st received. I have been in the pump business here for eight years. Before the people began using pumps there was a great deal of chill and fever, but now since their introduction we rarely ever have a case of chill and fever. Dr. McNatt told me some time ago that in a section of country between here and Lumberton, where they had so much malaria several years ago, he rarely ever has a case, and he says he has no doubt it is the use of pumps that has caused the improvement in the health of this section. The doctors in this section all recommend pumps in preference to open wells."

FROM PHYSICIANS—UNFAVORABLE.

Dr. J. F. Miller, Superintendent Eastern Hospital, Goldsborough, N. C.—"I, in common with many physicians, have held to your theory on the water question; but recently some experiences have upset or rather disagreed with my theory. For a year we have had a great deal of malarial-fever, mostly of intermittent and remittent types, and I find those who use cistern water suffer about as much as those who drink well-water. Our wells are, however, driven wells and not dug-out wells. Our well-water was analyzed by Dr. Venable, of

Chapel Hill, and pronounced O. K. It may be that we have malaria in spite of good water from all our sources, and this supports our theory to some extent. The lowlands bordering on Little and Neuse rivers are prolific in malarial-fevers during most of our fall months; and the past August, September, October, and November we had in this hospital among patients and their employés and their families nearly two hundred cases, many of them relapses; but from this cause we had no deaths."

FROM OTHERS THAN PHYSICIANS—UNFAVORABLE.

H. Wiswall, Winsteadville.—"We have used cistern water and sometimes water from driven wells, never from the other wells. I cannot say that we have escaped the chills, but I do think that we have fared much better than others who use poorer water."

W. H. Johnston, Esq., Tarborough, Edgecombe County.—"Up to the time I attained the age of forty-three years I used water from ordinary wells, and since that time have used cistern water. I greatly prefer cistern water to the water we obtain from wells, and am sure it is more wholesome, but I suffered no more from malaria when I used well-water. I was married at thirty-seven years of age, and my family used well-water for six years and have since then used cistern water. I am now sixty-three years old. I cannot say that my doctors' bills for malarial diseases were greater when we used well-water than when we used cistern water. I think they were about the same."

Mr. Frank E. Hitch, Hamilton, Martin County.—"I have lived in Bertie and Martin counties for more than twelve years, in close proximity to Roanoke River. I have a wife and five children. In that time there has been but one chill in my family. I had that at Nag's Head last summer. We have drunk well-water all the time. No other family in this section has such a record as mine."

Mr. J. B. Bryan, Aurora, Beaufort County.—"Would say that cisterns are cheap and appreciated by our people. Am sorry to say that I am not certain that they add to the health of our people, but think they must."

In assigning to the evidence just cited its proper weight,

I am not unmindful that the conditions demanded by rigid scientific accuracy were not always present, but most of the letters are so clear, definite, and positive, as to be, to my mind, taken in connection with the evidence cited from other writers, absolutely conclusive of the fact that the malarial poison finds its way into the system largely—not to express it too strongly —through the medium of drinking-water consisting solely of, or contaminated by, surface washings, or chiefly of superficial soil water. It is to be noted that water from *deep*, open wells, where the surface water had to percolate a long distance—where it was thoroughly filtered—was comparatively innocuous (see letter of Dr. Pierce). It is stated by a writer on this subject (Dr. Bartley, cited above) that he has demonstrated this fact with a Pasteur-Chamberland filter; and it is well known that enough of the right sort of mother earth is one of the best of all filters. I would also call special attention to the fact, as clearly shown by the evidence given, that there is no special virtue in a driven well *per se* beyond keeping out the surface washings, but that it is the *depth* to which it is driven that confers the virtue. Note the difference in the results obtained from the shallow-driven wells of Southport and Pensacola, Fla., not to mention others, and the deep-driven wells of Perquimans and the deep-bored wells of Franklin, Va., and Southwest Georgia.

In order, if possible, to have this question of the part played by drinking-water in the production of malarial diseases investigated on a large scale, with all the conditions necessary for scientific accuracy strictly complied with, I addressed the following letter to the able superintendent of the Penitentiary, the Hon. A. Leazar.

RALEIGH, N. C., May 5, 1894.

Hon. A. Leazar, Superintendent of State Prison, Raleigh, N. C.

MY DEAR SIR: Remembering the interest in the subject of the influence of drinking-water in the causation of malarial diseases shown by you in our recent conversations on that line, I enclose a copy of a circular letter which I have sent to every physician in the eastern part of our State. From the replies to it I hope to obtain ample evidence of such convincing character as to bring about good results.

If you and your Board of Directors can see your way clear

to undertake it, I am sure you can be of great help in making this investigation that the State Board of Health has begun. The fact that one of the State farms is very malarial, and the further fact that the population resident thereon, being prisoners, are under absolute control, combine to make conditions exceptionally favorable to reliable and trustworthy experimentation, which can, by no possibility, do any harm, but may be productive of the greatest good, not only to the convicts themselves directly, but indirectly to the people of a large part of our State. If you find that you can undertake the experiment, I would respectfully suggest:

1. That you build a cistern for the collection of rain-water, and that you bore a well deep enough to get its water supply from beneath the stratum of impervious marl or clay.

2. That the prisoners may be divided, as equally as may be practicable and convenient, into three squads. That each squad, being, as far as possible, under exactly the same conditions in other respects as the other two, be absolutely resricted to the use of one kind of water—the ordinary water now in use, the cistern, and the deep well-water, respectively.

3. That if it be not already a routine practice—as it probably is—a full and accurate record of all cases of disease—malaria particularly—be kept from now on, in order to create a basis of comparison with a similar record after the change in drinking-water.

Bespeaking on the part of yourself and your Board of Directors a careful consideration of this matter, I am,

Very truly yours,

RICHARD H. LEWIS,

Secretary.

To this the following reply was received:

NORTH CAROLINA STATE PENITENTIARY, RALEIGH, N. C., May 8, 1894.

Dr. R. H. Lewis.

MY DEAR SIR: Yours of recent date, suggesting experiments by the Penitentiary of cistern and deep well-water, for the better sanitation of our convict camps, is received and duly considered.

I hope soon, by the assistance of Dr. Holmes, State Geologist, to make some exploration as to the possibility of getting

the deep water, and then, if successful, to adopt whatever plan seems most practicable and to promise the best results.

I will refer your letter to the Board, which meets May 21st, for their consideration.

With great respect, I am

Yours truly,

A. LEAZAR.

I also had a personal interview with Mr. A. B. Young, the energetic president of the Board. He showed much interest in the matter, and promised to see what could be done.

Learning that driven wells had been tried on the State farms in Halifax, I wrote enclosing circular letter No. 2 to Drs. George H. West and H. B. Furgerson, physicians to the farms. Only one reply has been received, I regret to say, so far, and that not so full and detailed as it will be in the near future, as appears in the letter itself. It is quite instructive, however, as it is, and we may look forward with much interest to Dr. West's promised paper. The letter is as follows:

WELDON, N. C., September 6, 1894.

Richard H. Lewis, M.D., Raleigh, N. C.

MY DEAR DOCTOR: Yours of the 5th to hand, and in reply would say that I am preparing an article for publication for the *North Carolina Medical Journal*, entitled "Good Drinking-Water *versus* Malaria," but will not have it ready before October, as I want to include in my observations the month of September, as August and September are the unhealthiest months on Roanoke River; but I can give you a practical illustration of the result of using water from driven pumps for August. There has been an average of sixty-five hands (greatest number eighty) working on the dyke on the Roanoke River on Northampton State Farm, and I have had them to use exclusively water taken to them from the quarters two miles distant (driven pump), and during the entire month there was not a *single case* of intermittent-fever among the force. This I consider the most unhealthy situation on the entire farm, and, to use an old Louisiana expression, the "malaria is such that you can stir it with a stick or cut it with a knife." During my twenty-three years' experience in

the active practice of medicine, including a residence of six years on Red River, in Northern Louisiana, I have been a great stickler for good drinking-water, and I think the day is not far distant when the malarial dilemma will be solved by working up a public sentiment in favor of the use of good drinking-water. I am fully aware that one swallow does not make a summer, but I am greatly encouraged in the line of work I am pursuing during my four months' residence as physician to State farms. If you wish, I will contribute the article I have reference to to the *Bulletin.*

Yours very truly,

GEORGE H. WEST.

I am very much in hopes that the authorities of the Penitentiary may carry out in detail, on one of its farms at least, the experiment suggested in my letter to Superintendent Leazar. It would be extremely valuable and carry great weight in the scientific world.

While this investigation is not yet concluded, I believe the reader will agree with me that the case is practically made out, and that we may claim with certainty that the malarial poison finds its way into the human system through the medium of drinking-water, and that, in all probability, it constitutes its principal avenue of access. Q. E. D.

Excluding malarial diseases, there is, in my deliberate opinion, no healthier country on earth than Eastern North Carolina. If the universal employment of pure drinking-water in that section could be brought about, its health record would indeed be revolutionized, and that really splendid country would blossom as the rose.

NITRATE OF SODA FREEZER.—Instead of ice and salt, nitrate of ammonia is used. For a small ice-cream freezer, seven pounds of the nitrate and three quarts of water. The freezer is then rotated. The cream or water is quickly frozen if the material is first cooled down before applying the nitrate. The nitrate is recovered for re-use by evaporating the solution to dryness on the kitchen stove.

MEDICAL EXCERPT.

By T. P. Corbally, A.M., M.D.

Typhoid Fever—Its Local Treatment.—M. Fernet, in a statement made to the Société Médicale des Hopitaux (*La France Médicale*, October 19th) said: "If typhoid almost always follows the general characteristics of the disease, it has been frequently observed that local manifestations arise which modify the general conditions to such an extent that the diagnoses may become erroneous. All local manifestations are not, properly speaking, typical symptoms; they are due to secondary infection. The local symptoms accompanying typhoid-fever are of two kinds; there are conditions that are *typical* and those that are *complications*.

"The former are sometimes produced by the existence of a prior local lesion; sometimes, again, they are caused by the dissemination of the bacilli through the blood and their localization in certain determined points. These conditions are applicable to all infectious diseases that are in their nature general.

"The local symptoms are, from a clinical point of view, often latent; their development is often slow and indolent. But these accidents are very frequent and should always be looked for.

"As an example, I will relate a case in which many local manifestations were present. A young girl having the symptoms of typhoid-fever, and the diagnosis not being doubtful, we prescribed the usual treatment, with cold baths and benzonaphthol. During the course of the disease different local manifestations could be traced. From the first few days there were signs of sub-acute peritonitis—abdominal pain, abdominal tympanitis, peritoneal effusion, but of little importance. No puncture was made for the purpose of exploring the abdomen. This peritonitis persisted during fifteen days, and disappeared without leaving any traces.

" From the beginning there was also present a manifest cardiac erethism. To these symptoms were added the signs of a dry pericarditis and, at the same time, nervous disturbances appeared which seemed to depend on a meningitis, and, finally, to these symptoms were added those of a capillary bronchitis and broncho-pneumonia. We have, then, to take into account the presence simultaneously of a meningitis, a pericarditis, and a peritonitis. Are not these the symptoms of an acute tubercular infection? The analogies are striking; the specific agent alone is wanting.

" These local symptoms are due to the specific agent, and are different from the complications produced by the ordinary agents of secondary infections."

TRIONAL—ITS HYPNOTIC EFFECTS.—M. Vogt read a note at a meeting of the Société de Thérapeutique, on the hypnotic action of trional (*Le Progrès Médical*, October 13th). He prefers it to sulfonal, which has little solubility and is very slow to act, but its effects are prolonged; however, it very rarely gives rise to any accident. Trional is nearly related to sulfonal, is very soluble, and its action is prompt. It is given in doses of one gramme to one and a half grammes in a glass of warm liquid. It induces a quiet sleep, and the awakening is normal. M. Vogt recommends it in cases in which the patient finds it difficult to sleep, rather than for neurotic patients, who are in the habit of awakening during their sleep. He is of the opinion that if the medicine be given for two days in succession without satisfactory results it ought to be discontinued. It should also be discontinued if used for five or six days in succession. The simultaneous use of bicarbonate of soda prevents the danger of toxic effects from trional. The physician ought also to watch the constipation that is likely to arise from its use.

M. C. Paul engaged very warmly in the defence of sulfonal, which, in his opinion, was in no way inferior to trional. Its great advantage consists in the fact that it exerts no special influence on the circulation nor on the respiration. It procures a light sleep and a normal awakening.

M. Bardet took the same view of sulfonal, trional. and tetronal, which are capable of rendering great service in ner-

vous insomnia; but he thinks it necessary to remark that none of these medicines produces a sleep that is followed by a normal awakening. All the patients who use them find after sleep a heaviness in the head and a clammy condition of the mouth—phenomena analogous to those found after sleep following drunkenness.

ANÆSTHESIA—A NEW APPLICATION.—MM. Langlois and Meamange (*Le Progrès Médical*, October 13th) report to the Académie de Médecine that, to lessen the danger of arresting the action of the heart with chloroform, they give the patient, a quarter of an hour before the anæsthetic, a subcutaneous injection of a centigram of morphine, three centigrams of sparteine in a cubic centimetre of distilled water. Of one hundred and forty-eight cases, often in old people, in tuberculosis, in albuminuria the application was sometimes prolonged for two hours without the slightest disturbance of the action of the heart. The narcosis follows rapidly, is easily maintained with small doses of the chloroform. In a few prolonged cases the respiration became a little enfeebled, but without affecting the heart. A few rhythmic tractions of the tongue restored the natural force of the respiration.

LYCETOL.—Dr. Wittzack (*Allg. Medicin, Central Ztg.*, No. 7, 1894) calls attention to this new derivation of piperazine, which has been introduced by the Farbenfabriken vorm. Friedrich Bayer & Co., of Elberfeld, as a uric acid solvent. Lycetol is the tartrate of dimethylpiperazine. If the theory is correct that in gout in general there is no increased formation of uric acid, but that the blood of gouty persons is only faintly alkaline, and therefore less capable of holding uric acid or its salts in solution, then the administration of this tartrate of a piperazine derivative must produce the combined effects of its components. Lycetol also possesses the great advantages of having an agreeable taste and of being non-hygroscopic. Its aqueous solution has an agreeable acid taste, and if some sugar be added it is cooling like lemonade, and does not excite repugnance when administered for a long time.

THE OHIO PURE FOOD LAW AND "VIN MARIANI."—Pro-

fessor C. T. P. Fennel, of Cincinnati, Chemist for the Ohio Food and Dairy Commission, and who made the analysis of "Vin Mariani" on which Mr. John Keeshan, a druggist of Cincinnati, was arrested on the charge of violating the Ohio Pure Food Law in the sale of "Vin Mariani," the claim being made by Professor Fennel that said preparation was not up to the standard within the meaning of the law, has acknowledged that he made a mistake in establishing what the standard is, and acknowledges to the counsel of Mariani & Co. that he had not, at the time of making his analysis, examined the latest edition of the United States Dispensatory, and that "Vin Mariani" is clearly and completely up to standard as established therein. The case against Mr. Keeshan for the sale of "Vin Mariani" is thereby disposed of, and Professor Fennel has also authorized the public announcement through the press of the fact that the sale of "Vin Mariani" in the State of Ohio is perfectly lawful, and such sale cannot be interfered with under the laws.

"*Vin Mariani*" is so called in honor of its first manufacturer. "It is the product of *Coca Erythroxylon.* M. Mariani was the first in Europe who took up the study of the plant, and over thirty years ago commenced manufacturing for the medical profession the various specialties associated with his name—viz., 'Vin Mariani,' 'Elixir Mariani,' 'Pâte Mariani,' 'Thé Mariani,' 'Pastilles Mariani,' etc., preparations which are known all over the world, and which have acquired their well-known reputation by their purity and efficacy. The stimulating and strengthening property of the leaf in its natural state has been tested by experienced travellers and botanists during several centuries, and it is this invigorating property which the physician wishes to bring into use, and which he is enabled to do in a palatable form by means of 'Vin Mariani,' this wine being indicated where there is great depression, long-continued exhaustion, and where a special stimulative action is desired. 'Vin Mariani' is agreeable, palatable, imparting by its diffusibility an agreeable warmth over the whole body, and exciting functional activity of the cerebro-spinal nerve centres. We have frequently prescribed this wine, and we can, from practical experience, recommend it."—*The Provincial Medical Journal, London, England.*

ANTIKAMNIA *Powdered.*—At the request of the proprietors, we take pleasure in correcting the following paragraph from a recent number of the *Alienist and Neurologist:* "The adoption of the monogram on the new tablets and the recall of all the old stock from the market will prove of benefit to this firm and the many physicians who may hereafter desire to afford relief by its use. *It will henceforth be sold only in tablet form*" —this is the mistake—wholly unintentional on the part of the *Alienist.* The changes in style of packages and form of tablets in no sense changes Antikamnia, nor withdraws "Antikamnia *Powdered*" from the market, which remains now as always, and in increasing demand.

EXAMINATION OF THE BLOOD IN PHTHISIS.—The Colorado State Medical Society has offered a prize of $100 for the best essay on the diagnosis of tuberculosis by examination of the blood. Preference is to be given to the detection of the pre-tubercular state. The prize is open to an essay written in the English language, condensed to read in thirty minutes' time; and the award is to be reserved for an essay deemed sufficiently meritorious—that is, one giving rules for the diagnosis to be made from the blood alone, without the patient being seen. The Prize Committee consists of Dr. Charles Denison, Dr. H. A. Leman, both of Denver, and Dr. S. E. Solly, of Colorado Springs.

THE THERMOGEN is an appliance for keeping up the temperature of a patient during an operation, doing away with blankets and hot-water bottles. It is in the form of a quilted cushion, with an arrangement of fine wires inside by which any desired degree of heat may be maintained by electricity. It was exhibited at the last meeting of the Royal Society of England.

DRUGGISTS' SAMPLES.—Doctor: "Well, Tommy, you found the pellets helped you, didn't you?"

Tommy: "Yes, siree; I sold them to a boy for ten cents to shoot out of his pistol."

EDITOR'S TABLE.

SANITARIAN, DECEMBER NUMBER, 1894.

☞ ALL correspondence and exchanges and all publications for review should be addressed to the Editor, DR. A. N. BELL, Brooklyn, N. Y.

MORE ABOUT THE COMMUNION CUP.

"Is it nothing to you, all ye that pass by?"

To the Editor of THE SANITARIAN:

I am surprised and disappointed at the remarkable indifference of the religious press to the continued agitation in the medical and secular press concerning the alleged dangers of the communion cup. I must request space to enter my protest against these imaginary alarms which we hear so much about. This widespread plea for individual cups, or for the abandonment of the use of wine in the communion, ought to receive prompt and vigorous treatment.

Not one of those who have had so much to say about its dangers, so far as I have been able to ascertain, has made any painstaking research to justify the unwarranted assertions. On the other hand, years ago, at considerable trouble and expense, I sought information from the most distinguished medical men in the world on this very subject. From that time until this no medical man has ever been able, to my knowledge, to produce one solitary case in which participation in the holy communion has been the cause of disease. I think, therefore, it is safe to assume that, with the many interesting and valuable investigations still undetermined, medical men had better seek some other source as the cause of infection from disease. I doubt if patients suffering from loathsome diseases very often present themselves at the communion rail. The devout Christian had better employ his thoughts in the

consideration of his soul's salvation rather than in the dangers of infection from disease of his neighbor.

W. THORNTON PARKER, M.D.

GROVELAND, MASS., October 11, 1894.

Apropos to the above, it affords us pleasure to add the following from *The Living Church*, November 3d, 1894:

"Individual Cups."

"If we could say it without using slang, we should say that the discussion of this subject by the secular press 'makes us tired.' It is nauseating. The cause of the agitation is not far to seek. There is money in it. Many a fortune has been built up by trading on the fear and ignorance of people, but we know of no more despicable scheme for putting money in the purse than this enterprise for selling toy cups. The wildest and silliest stories are telegraphed from one end of the country to the other, in the name of science and the microscope. Christian people are alarmed, and abandon the Communion or timidly acquiesce in this foolish performance which one of the papers flippantly calls 'Communion for one.' We did not suppose that Churchmen would be much disturbed by such nonsense. We thought they would have confidence in their bishops and other pastors, and would be assured that the Church could not continue for ages to present a poisoned chalice to the lips of her children. Doubtless that is the mind of most of our communicants; but there are some who are disturbed, and think this thing has gone far enough, and needs to be dealt with. We have pamphlets and clippings sent in from all points of the compass, with the request that *The Living Church* 'do something,' reply to the arguments, expose the fraud, etc.

"Not long ago we showed the absurdity of claims made by a so-called 'scientist,' as to germs found in a 'Communion cup,' and we then referred to the fact that all experience of the ages refutes the fantastical theory which is now exploited in the interest of trade. As the propaganda of toy cups seems to be pushing with increasing vigor, getting free advertising in most of the secular papers, it may be well to give it further attention.

"The unwisdom of the movement from a temperance point of view is evident. These cups, petty as they are, must serve a measurable quantity of wine. As a matter of fact, they serve about a tablespoonful, an ounce of wine. This is about one half a 'drink' as it would be served at the bar of a saloon. It is 'a glass of wine,' though a small one, enough to produce the characteristic 'effect' (though very slight) of

alcohol. It might be enough to imperil a reforming drunkard. But in a prudent administration of the chalice, where the priest retains his hold upon the cup, an ounce of wine diluted with water, as is the general custom in our Communion, would serve for a dozen or more communicants; only a few drops would be given to each.

"*The Living Church* has already quoted the experience of the thirty thousand or more Anglican clergy who have been for centuries not only administering the one chalice, but also have, according to the law of the Church, consumed the dregs and the alleged microbes, without a single case of contagion suspected. We are glad to add the testimony of Lutheran pastors who have administered in the same way. Newspaper reports all tell the same story. Many 'refused to talk, on the ground that they did not believe in the agitation of the subject.' Others, who responded, testified that not a single case of disease had ever been traced to the Communion cup, nor was there a case on record where a person acquired a taste for strong drink through this source. A bishop of the Evangelical Church says that the use of 'individual cups' is contrary to the very idea of the Communion. Pastor Kutz says that the agitators of the new idea are people who do not belong to churches. Commend us to Pastor Kutz!

"But this ecclesiastical sideboard invention claims to be based upon 'sanitary' principles. It is nothing if not hygienic. We must not be governed by sentiment, by religion, in the treatment of our bodies. We must beware of microbes—strain out the microbes and swallow the devil!

"The *reductio ad absurdum* of the whole question is the proposal of a 'scientist' to administer the wine in capsules! But objection is made that pious people might not like to take 'medicine' at the altar; 'many persons cannot swallow capsules;' 'the idea is not liked.' Some one suggests that a grape be put in the mouth of each communicant! Then, lest there be some microbes in the bread, let it be administered in pellets, sterilized and served with instruments that have been treated with bi-chloride. Upon this ridiculous theory a family could not shake hands or take a meal together without disinfecting the whole house and every member of it.

"This movement to medicate our religion, culminating in capsule Communion (!), claims to be 'sanitary.' To sanitary experts, then, we will refer it. There is probably no higher authority than Dr. A. N. Bell, editor of THE SANITARIAN."

Then follows a quotation of our editorials in August and October numbers.

Nevertheless, the Committee on Hygiene of the New York

County Medical Society, in their annual report, October 22d, reassert—and appear to claim it as an honor—that they were the first to point out, a year ago, the danger of the Communion cup. And among the new reasons they assign for it is:

"It is said that on one occasion during the past summer twenty-five hundred persons partook of the Communion service at a near-by camp-meeting. If all the persons whose lips came in contact with the cups were free from communicable disease, it was indeed a remarkable assemblage."

But it is still more remarkable that among the hundreds of thousands times greater numbers of communicants after the same manner, monthly at least, throughout the world for more than a thousand years, this committee should not be able to adduce an authenticated case of disease so communicated.

We have before shown that the anti-communion cup fad, as represented by the Rochester proprietors of the patent wine-tray, is based upon imaginary conceptions and falsely alleged epidemics and their causes. It is, indeed, as devoid of substantial reasons for its countenance by physicians as the patent liver pad or any other of its quackish congeners.

THE CHURCH SANITARY ASSOCIATION is the name of a society lately organized in England. Its purpose is to have the Church, both pulpit and pew, act more strenuously in teaching sanitation, to circulate papers by admitted sanitarians, and to give occasional sermons on the same subject. This is an excellent scheme, and one that should be emulated generally.

Sunday-school sanitation is a good opening wedge; these gatherings of children are often means of spreading disease that are wholly overlooked, while the nice eye of the health authorities is pointed upon the infection to be had from circulating slate pencils in the public schools. Apart, however, from the possibilities of carrying an existing disease from one scholar to another, a great many Sunday-school rooms are excellent breeders of fresh ones. They are often sunless and draughty, to say nothing of their poor ventilation. A class formed of church care-takers to be taught the simplest principles of airing an apartment would be another valuable move on the part of this churchly sanitation society.

SANITATION SUNDAY.—The Church Sanitary Association suggests that the seventh Sunday after Trinity be known as Sanitation Sunday, because the Gospel for this day contains the record of Christ's disciples distributing wholesome food to those who were already in the enjoyment of fresh air, pure water, and abundant light, thereby indicating the Divine will that man shall enjoy fulness "as well for the body as the soul." We have Labor Day and Hospital Sunday, and other interesting memorial occasions, but none better calculated to promote the welfare of the people than would be the addition of "Sanitary Sunday."

"CERVELLO DI GALLINA" is the caption of an insulting editorial in the September number of *Salute Publica*, of Perugia, Italy, alluding to the accomplished author of the article on "Early Attempts to Arrest the Ravages of Small-pox in America," published in our August number.

The editor of *Salute* may think that he obscures his incompetency to deal with the subject and lightens his task as a reviewer, by attempting to ridicule a writer with whom he does not agree; and the more, as he does not seem to realize the incongruity of his reference to THE SANITARIAN as an "eccelente giornale," so esteemed presumably on account of the excellence of its contents; and on no subject is the quality of its excellence more emphatically pronounced than by its unqualified endorsement and advocacy of the protective power of vaccination against small-pox, with which the article referred to is in entire accord. And it is this judgment, as expressed by Mrs. PLUNKETT, which the editor of *Salute* takes up as a challenge to his intelligence, and ventures to measure by and find a comparison with the calibre of his own brain, as opposed to the most universally accepted truth by the medical profession throughout the world.

In this country, as elsewhere, there are some fanatics on the subject of vaccination, whose brains are so insusceptible to evidence as to resemble the class of religious bigots whom the late Dr. Holmes likened to the pupil of the eye—the more light you pour on it the smaller it grows; and the editor of *Salute* is evidently one of that kind. But we do not think one could be found in America so rude as to apply such a dis-

respectful term to a lady contributor to any journal he deemed excellent, or indeed under any circumstances, because she differed with him in judgment.

DR. ROUX DECORATED.—Dr. Roux has received from President Casimir-Perier the congratulations of the Government and the Cross of Commander of the Legion of Honor, in recognition of his work upon the serum treatment of diphtheria.

AMERICAN PUBLIC HEALTH ASSOCIATION.

Abstract of the Proceedings of the Twenty-second Annual Meeting, held at Montreal, Canada, September 25th–28th, 1894.—Continued from page 465.

In the discussion which followed the conclusion of the papers on the "*Pollution of Water Supplies*," etc., in the afternoon of the first day, . . .

DR. A. N. BELL said, with reference to DR. LEE'S paper on the "*Cart Before the Horse*," he distinguished the horse as the sanitary authority, and with all due respect to sanitary authorities generally, and particularly to the author of the paper, according to his observation, DR. LEE'S example was unfortunately illustrative of the too common tardiness of sanitary authorities to anticipate evil results and shape public opinion, until after the results became manifest. Preventive medicine was but another name for disease prevention, and its practical application should be to seek out and attack the causes *ab initio*, without abiding results which are, unfortunately, the common subject of contention by the health authorities, at the tail end of the cart instead of in front of it.

DR. S. W. ABBOTT, of Massachusetts, said that several of the laws for the protection of the water supplies were inoperative or ineffective; especially was this true in his State.

DR. P. H. BRYCE, of Toronto, thought perhaps the Committee had overlooked the subject of purification and how to prevent pollution of public water supplies, yet their work had been splendid, and the Committee might be excused on account of the limited length of time that they had to formulate their report.

MR. JOHN MITCHELL, of New York, a master plumber and delegate from the Master Plumbers' Association, stated that they are in hearty support of vigorous laws and prompt and decided enforcement of such laws in this matter. He thought this body would be a power to enforce earnest and active laws of sanitary inspection. The architect directs no plumbing in the public buildings to-day; we are simply a machine. The architect, contractor, and householder throw the responsibility on us, which we do not justly deserve. We desire participation in the plans as laid out by the architect and contractor. The plumbers are in earnest to help carry out this work, as suggested in DR. LEE'S paper.

DR. LEE expressed his thanks for the feast of good things we have heard to-day. It would be invidious to refer to any paper. The one that appealed to him most strongly was the "*Constant Pollution of the Homesteads of Farms*," for surely the pollution of the family well is most prolific of this enteric form of trouble.

DR. C. A. LINDSLEY, of New Haven, Conn., cited a case of failure of "the cart-before-the-horse" plan, as follows: In his city a law was passed by the Common Council to appoint a "plumbing inspector" to be approved by the State Board of Health. A gentleman was selected for this position and then presented himself before the State Board for examination. He failed to pass the necessary requirements, and the Board so reported to the Mayor and Council. The man was, nevertheless, appointed to the position without the indorsement of the State Board.

The Evening Session was devoted to the welcome by the civil authorities and the Address of the President.

DR. ROBERT CRAIK, Chairman of the Local Committee, welcomed the Association, whose aims, he said, appealed to everybody, no matter what their age, creed, or nationality. . . .

Canada was not slow to recognize the power for good which such an Association offered, and had taken a prominent part in its operations. Canadians prominent in health and sanitary matters had from time to time occupied important positions among its officers, and our distinguished sanitarian and fellow-townsman, DR. E. P. LACHAPELLE, President of our

Provincial Board of Health, had this year been its President; and it is largely to his influence and to the appreciation of his great gifts as a leader in matters connected with public health that Montreal owed the gratification of seeing the Association working in its midst to-day.

DR. CRAIK proceeded to extend a welcome to all, and concluded: "Let us, regardless of all artificial lines of separation, join together as one great family, striving earnestly to prevent, as far as may be, human misery, disease, and premature death, and to increase by every means in our power the sum of human health, happiness, and prosperity."

The Chairman then briefly introduced LIEUTENANT-GOVERNOR CHAPLEAU. His Honor was greeted with hearty applause when he rose to speak. He extended first a welcome in French. A governor had no right to speak, only to sign. He would have been proud to have had the privilege of signing the address of welcome to this important Association. He would extend a hearty Canadian *Bienvenu* to the Association. Then His Honor addressed the meeting in English. Mexico had treated the Association hospitably at its last meeting. Montreal was doing the same now, and would continue to do so. There was no use for him to say how noble was the object of the Association. There might be labor congresses, peace congresses, and congresses for this, that, and the other thing. There could be no greater and more noble object than that of the Health Association, the object of conserving the health of this Continent and of the world. People said that the length of life is decreasing; but that would no longer be a fact when the Association had succeeded in its noble aims. One thing they had succeeded in doing. They had stopped the great plagues which were once the dread of humanity. The questions which the Association discussed were large and important. Personally he could appreciate medical science. He had been a sick man for fifteen years, and as a good patient he appreciated his doctor. He could consequently appreciate the Association, the great doctor of humanity. He hoped that the fruits of its discussions would be taken advantage of by the national and civic governments of the Continent. The Association had reason to be proud of what its members had done for Canada. The first Board

of Health in Canada, that of the city of Montreal, was organized when one of the members of the Association, DR. HINGSTON, was Mayor of the city. The President of the Association had also done much as Chairman of the Provincial Board of Health to perfect the system of provincial sanitation. So long as he was Lieutenant-Governor he should consider it one of the most important functions of the government to assist in carrying out the work in which the Association was concerned. His Honor incidentally remarked that the efforts of the Association reminded him of the great benefits sanitary science had rendered to humanity in the question of food alone. It was for the Association to prove the falsity of the verses :

" Placid I am, content, serene,
I take my slab of gypsum bread,
And chunks of oleomargarine
Upon its tasteless sides I spread.

" The egg I eat was never laid
By any cackling, feathered hen ;
But from the Lord knows what 'tis made
In Newark by unfeathered men.

" I wash my simple breakfast down
With fragrant chicory so cheap ;
Or with the best black tea in town—
Dried willow leaves—I calmly steep.

" But if from man's vile arts I flee
And drink pure water from the pump,
I gulp down infusoriæ,
And hideous rotatoriæ,
And wriggling polygastricæ,
And slimy diatomaceæ,
And hard-shelled orphryocercinæ,
And double-barrelled kolpodæ,
Non-loricated ambrœilæ,
And various animalculæ ;
Of middle, high and low degree ;
For nature just beats all creation
In multiplied adulteration."

HON. L. P. PELLETIER, the Provincial Secretary, was next introduced, and read an eloquent address of welcome.

HIS WORSHIP, the Mayor, then took the stand and read a brief address of welcome on behalf of the city. He clinched

the good effect produced by the simple words of welcome by expressing his wish to be enrolled as a member.

THE PRESIDENT called upon DR. GREGARIOS MENDIZABAL, of Orizaba, Mexico, to reply on behalf of the Association. Although but few understood the speech, for it was in Spanish, the orator evoked round after round of applause by the very fervor of his eloquence and the musical cadence of his flowing periods. He was proud to speak in Montreal as the representative of the Spanish race. Science knows no country, but attends to the salvation of the people of the whole world, and the natural prosperity of all the peoples thereof. The fame of Montreal, and its great institutions of learning and beautiful benevolence, had reached Mexico. Nor had the people of Mexico forgotten the glorious history of the northern part of the Continent. The people of Anglo-Saxon, French, and Spanish ancestry had equal right to be proud of the development of Canada.

DR. E. P. LACHAPELLE then delivered the anniversary address, as published in our preceding issue.

Sand Filtration of Water, with Special Reference to Recent Results Obtained in Lawrence, Mass., by GEORGE W. FULLER, Bacteriologist, etc., promised for this issue, is, by the pressure of other matter, unavoidably postponed to the next.

(*To be continued.*)

SUBSCRIBERS IN ARREARS.—An Illinois newspaper lately sued forty-three men who did not pay their subscriptions. It got judgments against each of them. Of the forty-three some twenty-eight then swore that they owned no more than the law exempts from judgments. They were thereupon arrested for petit larceny and bound over in the sum of $300 each. All but six gave bonds. The postal laws make the taking of a paper out of a post-office, with refusal to pay for it, petit larceny, but if any man did that with the *Eagle* it would be grand larceny.

MORTALITY AND MORBILITY REPORTS.

ALABAMA.—Jerome Cochrane, M.D., State Health Officer, Montgomery.

Mobile, 31,076: T. S. Scales, M.D., Health Officer, reports for the month of September a mortality of 57, of which 33 were colored, and 14 were under five years of age. The annual death-rate per 1000 was 22.

Zymotic diseases caused 8 deaths, and consumption, 9.

ARKANSAS.—John L. Hancock, M.D., President, Argentina; D. W. Holman, Secretary, Little Rock.

CALIFORNIA.—C. W. Nutting, M.D., President, Etna Mills; J. R. Laine, M.D., Secretary, Sacramento.

For the month of September the reports from 78 cities, towns, villages, and sanitary districts, aggregating a population of 760,875, show a mortality of 957—a death-rate of 15 per 1000 per annum.

There were 145 deaths from consumption, 47 from pneumonia, 20 from bronchitis, 4 from congestion of the lungs, 72 from diarrhœal diseases, and 61 from other diseases of the stomach and bowels, 16 from diphtheria and croup, 1 from scarlatina, 3 from whooping-cough, 33 from typhoid-fever, 5 from malarial-fevers, 10 from cerebro-spinal-fever, 28 from cancer, 3 from erysipelas, 75 from heart disease, 12 from alcoholism, and 418 from other causes.

Reports of prevailing diseases from 46 localities, outside of the larger towns and cities, give 23 cases of pneumonia, 57 of bronchitis, 24 of pleurisy, 14 of congestion of the lungs, 64 of diarrhæal diseases, 18 of diphtheria and croup, 9 of measles, 38 of whooping-cough, 36 of *la grippe*, 37 of typhoid-fever, 159 of malarial fevers, 9 of cerebro-spinal-fever, 15 of erysipelas, 81 of rheumatism, 80 of neuralgia, 60 of tonsilitis, and 39 of pharyngitis. Chicken-pox epidemic at Madera and Fresno Flats.

Los Angeles is disturbed by an outbreak of diphtheria, attributed by many persons to a public school, but the Health Officer's opinion is that the East side cases (where the disease prevails) were caused by cesspools and privy vaults in an old settled locality, bad drainage, and by bad water from wells used in that neighborhood.

COLORADO.—A. Stedman, M.D., President, Denver; Henry Sewell, M.D., Secretary, Denver.

CONNECTICUT.—Professor William H. Brewer, Ph.D., New Haven, President; Professor C. A. Lindsley, M.D., Secretary, New Haven.

The mortality report for September has been received from 164 towns in the State. There were 1183 deaths reported in the State during the month. This was 114 less than in August, and 122 more than in September, 1893, and 128 more than the average number of deaths in September for the five years preceding the present. The death-rate was 17.4 for the large towns, 17.09 for the small towns, and 17.6 for the whole State. The deaths from zymotic diseases were 298, being 25.4 per cent of the total mortality. There were 111 deaths from consumption.

Waterbury.—Scarlet-fever placards are becoming alarmingly numerous in some parts of the city, particularly in the Brooklyn District and Valley View Park. Forty cases were reported during the last week in October, and the number rapidly increasing.

Willimantic.—Typhoid-fever, of which there have been several cases reported during the month of October, is creating some alarm, and the more because the water supply has been low all summer owing to the excessive drought, and as a consequence it is very impure; insomuch that the physicians say it should in no case be used for drinking purposes unless first boiled.

Wesleyan University, Middletown. November 6th President Raymond gave out the following statement:

"Twenty-three students and one member of the Faculty have been attacked by fevers of malarial type, though this number included several cases which, at least, thus far, are so slight

that they should, perhaps, be omitted in the enumeration. Fourteen have gone to their homes and 10 remain in Middletown.

". . . The question of the cause of the sickness is being carefully investigated, but as yet no satisfactory conclusion has been reached."

November 12th (special from *Boston Journal*):

"The committee of the Faculty, appointed some time ago to investigate the causes of the epidemic, has made its report.

"They find that the trouble was caused by the students eating raw oysters. The committee does not wish by this report to condemn all raw oysters, for it was only through exceptional circumstances that these particular oysters obtained their deadly character, and oysters taken from the same beds would probably now be perfectly harmless. The committee expects soon to be able to give a more scientific statement, containing detailed reports of their investigations."

DISTRICT OF COLUMBIA, 250,000: W. C. Woodward, M.D., Health Officer.

Mortality report for the five weeks ending October 27th, 438, of which number 216 were of colored people, and 136 were under five years of age. The annual death-rate was 17.5 per 1000. There were 103 deaths from zymotic diseases, and 62 from consumption.

FLORIDA.—Hon. W. B. Henderson, President, Tampa; Joseph Y. Porter, M.D., Secretary, Jacksonville.

The summary, as published in *Florida Health Notes* for the month of August, is as follows:

Number of counties reporting, 45; number of cities reporting, 3; total population of said counties and cities, 391,422; number of births reported, 572; number of marriages reported, 312; number of deaths reported, 391; birth-rate per 1000 per annum, 16.80; death-rate per 1000 per annum, 11.88; average age of this month's decedents, 26.39; number of deaths under five years of age, 128; number of deaths over seventy years of age, 28; number of deaths by violence, 10; number of premature and still-births, 9.

Sanitary matters seem to be in a very fair way throughout the State. Jacksonville, Tampa, and Ocala are discussing systems of sewerage, while Key West, Tallahassee, and Madi-

son are constructing or preparing to erect water-works systems. A cremator has just been ordered for Ocala.

ILLINOIS.—William E. Quine, M.D., President, Chicago; J. W. Scott, Secretary, Springfield.

Diphtheria is prevailing in Southern Illinois along the Ohio River. "Coffins can hardly be furnished fast enough with which to bury the dead. Not fewer than 40 deaths have occurred within the week ending October 27th, and it is not uncommon to bury two children in a single coffin. A man from across the river arrived at Caseyville, Ky., for the fifth coffin furnished to one family."

Chicago, 1,600,000: A. R. Reynolds, M.D., Commissioner.

Antitoxine Treatment of Diphtheria.—The City Council adopted an ordinance, October 31st, authorizing the Commissioner of Health to expend the sum of $10,000, or so much thereof as may be necessary, in carrying out the provisions of this ordinance, and the City Comptroller is hereby directed upon the certificate of the Commissioner of Health to cause the said expense to be paid out of any moneys in the city treasury not otherwise appropriated.

The work was forthwith entered upon, even to the manufacture of the fluid.

INDIANA.—S. S. Boots, M.D., President, Greenfield; C. N. Metcalf, M.D., Secretary, Indianapolis.

Walkerton.—Three cases of small-pox reported. Isolation and vaccination promptly instituted, and danger of spreading slight.

IOWA.—Frederick Becker, M.D., President, Claremont; J. F. Kennedy, M.D., Secretary, Des Moines.

The *Monthly Bulletin* reports for the month of September:

Clinton, 22,000: Mortality, 77. *Typhoid fever* prevalent. The water supply is from wells, and two of these are near the cemetery.

Fort Wayne.—October 10th: An old well on La Salle Street is responsible for six or seven cases of *typhoid-fever*. Some weeks ago the member of the Board of Health from the south side was notified of a number of contagious diseases

in a certain quarter, and chief of these were several cases of typhoid-fever of a malignant form. An old well was looked upon with great suspicion, and the physician secured a bottle of the water and took it to City Chemist Gross for analysis. He reported :

" The sample of well-water submitted to me for analysis contains over 16 per cent of decayed organic matter in an advanced state of decomposition.

" Chlorides and nitrates are also present in large quantities, indicating contamination by excrementitious matter.

" This is the most filthy specimen of well-water ever brought to my observation, and its further use for culinary purposes should be at once condemned. W. O. GROSS,

Chemist."

Diphtheria is also epidemic in the vicinity of Lake Maxinkuckee and Burr Oaks, small villages west of Fort Wayne on the Nickel Plate. Twenty-three cases and four deaths are reported. The public schools and churches have been closed for an indefinite time.

Also in Irvington Township, Kossuth County ; Union and Ackley, Hardin County ; Jefferson, Greene County ; Liberty Township, Hamilton County ; Ottumwa, Marshalltown (epidemic in Woodbury School) ; Livermore.

Creston, 10,000 : Deaths, 8.

Keokuk, 20,000 : Deaths, 14.

Mason City, 10,000 : Deaths, 10.

Muscatine, 15,000 : Deaths, 15.

KANSAS.—J. P. Stewart, M.D., President, Clay Centre ; H. A. Dykes, M.D., Secretary, Topeka.

KENTUCKY.—Joseph M. Matthews, M.D., President, Louisville ; J. N. McCormack, M.D., Secretary, Bowling Green.

Louisville, 200,000 : W. P. White, M.D., Health Officer, reports for the year ending August 31st, 1894 : Deaths, 3140 ; under five years, 1431. Of the prevailing causes there were from consumption, 460 ; pneumonia, 253 ; inanition, 187 ; heart diseases, 165 ; old age, 164 (!) ; typhoid-fever, 145 ; diarrhœal diseases, 158 ; meningeal cerebritis, 121 ; cancer, 95 ; diarrhœal diseases, 86 ; convulsions, 78 ; bronchitis, 76 ;

paralysis, 63 ; kidney diseases, 61 ; marasmus, 56 ; croup and diphtheria, 47. Death-rates—whites, 14.2 ; colored, 22.0 : 15.7.

For the month ending November 2d, 1894 : Deaths, 286. From consumption, 40 ; diphtheria and croup, 25 ; old age, 23 ; inanition, 20 ; heart diseases, 19 ; typhoid-fever, 15 ; cerebral meningitis, 15 ; pneumonia, 14. Death-rate, 17.1.

LOUISIANA.—S. R. Oliphant, President, New Orleans ; W. R. Harnan, M.D., Secretary, New Orleans.

New Orleans, 254,000—184,500 white, 69,500 colored. There were reported for four weeks ending October 6th, 506 deaths, of which number 205 were among the colored people, and 155 of children under five years of age. The prevailing causes of death were : Consumption, 67 ; measles, 35 ; diphtheria, 16. Death-rates—whites, 21.28 ; colored, 35.97 : 25.98.

The Mayor and City Council having refused to grant an appropriation of $4000 to the Board of Health for the *antitoxine* treatment of diphtheria, the raising of the amount by private subscription was at once undertaken and speedily effected. And at the time of this writing (November 15th) we learn that Dr. Paul Gibier, of New York, has already expressed the needed serum—it may be, considering the prevalence of diphtheria, to save the life of some member of the Mayor's family, or possibly of the Council's.

MAINE.—C. D. Smith, M.D., President, Portland ; A. G. Young, M.D., Secretary, Augusta.

In this State the Secretary reports many local boards of health are prompt and efficient when there is need of action, and some are careless and comparatively inefficient. But an examination of the original annual reports from these local boards cannot fail to impress one strongly that the value of their work as a whole is inestimable.

In Auburn the interest of the local board of health in its work is shown by the fact that a meeting is held every Friday morning during the year. In the work of the board it is reported that there has been a hearty co-operation of the city government. " All contagious diseases have been cared for,

and we know of no instance where infection has been carried outside of the house in which the disease originated."

In Bangor in connection with cases of infectious diseases, "infected houses are placarded, the appropriate infectious disease circular is placed in the hands of the family, and the school agent is notified to have children from the infected house kept from school, the public library is notified, and careful watch is kept of the case until recovery or death ensues. The infected houses are then cleansed and disinfected, and the children are then readmitted to the school when the attending physician says that it will do."

The excellence of the work done by the board is due, in great part, to the fact that the secretary gives his whole time, year in and year out, to the sanitary improvement of the city.

From Dixfield.—The Secretary of the local board reports six cases of typhoid-fever in six different houses. The precautions taken were: Giving the patients dishes for their own special use, and scalding them after they were used by the patients; no person to eat anything in the sick-room, or anything that had been there; the careful disinfection of all soiled clothing and excreta. *The result was no secondary case in any house.*

Biddeford.—The report of the Committee of the Board of Trade, having been appointed to investigate the sanitary condition of the city, charges the local board with culpable neglect of duty, and recommends that in the future the Health Board be composed of two physicians and an associate member well posted in hygienic laws. This report was adopted, and resolutions were also adopted urging the municipal officers to see that the members of the Health Board attended faithfully to duty.

MARYLAND.—John Morris, M.D., President, Baltimore; James A. Steuart, M.D., Secretary, Baltimore.

Baltimore, 455,427: James F. McShane, M.D., Commissioner, reports for September that the total deaths were 656, a decrease of 9, compared with the corresponding month of September, 1893. Of these 495 were whites and 161 colored; a death-rate of 15.47 per 1000 for the former and 27.21 per 1000 for the latter. The death-rate per 1000 for the whole

population was 17.30. Sixty-three died from infectious diseases, 62 from consumption, 30 from pneumonia, 8 from bronchitis, 30 from cholera infantum, 1 from cholera morbus, 20 from diarrhœa, 10 from dysentery, 13 from enterocolitis, 5 from enteritis, 15 from gastro-enteritis, and 28 from typhoid-fever. Three hundred, or 45.73 per cent of the total deaths, were in children under five years of age.

MASSACHUSETTS.—H. P. Walcott, M.D., Chairman, Cambridge; S. W. Abbott, M.D., Secretary, Boston.

Boston, 501,107: S. H. Durgin, M.D., Chairman, reports for the month of September 1010 deaths, of which number 454 were under five years of age.

The annual death-rate was 24.18 per 1000. From zymotic, including tuberculosis (201) diseases there were 467 deaths, of which 76 were due to diphtheria, 30 to typhoid-fever, 15 to scarlatina, 15 to whooping-cough. Of these diseases there were reported during the month: Diphtheria, 250; typhoid-fever, 196; scarlatina, 125; measles, 18.

Diphtheria continues remarkably prevalent, and cases of typhoid-fever are also numerous. During the week ending November 10th there were of diphtheria, 120 cases with 25 deaths; typhoid-fever, 38 cases and 8 deaths. Scarlet-fever is also prevalent. At a meeting of the Board of Health, November 1st, the following regulation was adopted:

"1. Whoever is infected with scarlet-fever, diphtheria, or croup shall immediately proceed to some hospital set apart for the treatment of such disease, or to some isolated room or place approved by the Board of Health, and no infected person shall leave such hospital or isolated place until the Board of Health shall certify that all danger of communicating such disease to others has passed. 2. Every parent and guardian of any child or ward infected with scarlet-fever, diphtheria, or croup shall immediately cause such child or ward to be conveyed to some hospital set apart for the treatment of such disease, or to some isolated room or place approved by the Board of Health; and no parent or guardian shall permit such child or ward to remove from such hospital or isolated place until the Board of Health shall find and certify that all danger of communicating such disease to others has passed. 3. No other person than the attending physician and nurse shall enter any apartment or other place set apart for the treatment

or care of scarlet-fever, diphtheria, or croup until the Board of Health shall certify that said apartment or place has been satisfactorily disinfected. 4. No person who has been infected with scarlet-fever, diphtheria, or croup, and no article shall be removed from any room in which such person has been kept until the Board of Health shall certify that the same can be so removed without danger of infection to others. 5. The person having charge of the body of any person who has died of scarlet-fever, diphtheria, or croup shall cause such body to be immediately washed with a solution of corrosive sublimate (2 drachms to 1 gallon of water), wrapped in a sheet saturated with a solution of corrosive sublimate, same strength, and immediately placed in a tightly sealed coffin."

The Board has also adopted the *antitoxine* treatment of diphtheria.

School Sanitation.—It has for a long time been the desire of Dr. Durgin, Chairman of the Board of Health, to have a corps of physicians connected with the Board who should inspect the school children of the city each day of the school year. Such a plan has at last been perfected, and the money for the project has been promised by Mayor Matthews. A corps of fifty physicians has been engaged, and each will receive about $200 a year—a small remuneration, but, added to the experience provided, a satisfactory one to a good many skilled doctors. The plan is to have the physician visit the schools to which he is assigned each day, and to examine the children who are feeling ill, whose names are kept by the teachers. If it is found that a child is likely to come down with a contagious disease, the child is sent home. The duty of the physician, however, ends at the school, no conflict with the regular family physician being allowed.

Lowell continues to suffer from a water supply unfit for drinking. The *Sun* of that city says of the typhoid epidemic there: "There is a distemper in the water, it is dangerous to taste it unboiled; it is thickly charged with typhoid germs. The cases of and deaths from typhoid-fever are not published."

Diphtheria is prevailing in North Adams, Newton, Gloucester, Taunton, Waltham, Salem, and Cambridge.

MICHIGAN.—Hon. Frank Wells, President, Lansing; Henry B. Baker, M.D., Secretary, Lansing.

The Secretary reports for the month of October, 1894: Compared with the preceding month, the prevailing direction of the wind was west (instead of south), the velocity was 1.2 miles per hour greater, the temperature was 13.82° lower, the rainfall at Lansing was .78 of an inch less, the absolute humidity was less, the relative humidity was more, the day and night ozone were much less, and the depth of water in the well at Lansing was 5 inches less.

For the month of October, compared with the preceding month, influenza and tonsilitis increased, and cholera morbus, dysentery, cholera infantum, and diarrhœa decreased in area of prevalence.

Compared with the average for corresponding months in the eight years 1886–93, the prevailing direction of the wind was the same (west), the velocity was .8 of a mile per hour greater, the temperature was 2.06° higher, the rainfall at Lansing was .34 of an inch less, the absolute and relative humidity were slightly more, the day and night ozone were less, and the depth of water in the well at Lansing was 7 inches less.

Compared with the average for corresponding months in the eight years 1886–93, typhoid-fever was more prevalent, and typho-malarial-fever and intermittent-fever were less prevalent in October, 1894.

Including reports by regular observers and others, consumption was reported present in Michigan in the month of October, 1894, at two hundred and thirty-six places; typhoid-fever at one hundred and sixty-five places; scarlet-fever at one hundred and two places; diphtheria at eighty-two places; measles at ten places, and small-pox at eight places.

Reports from all sources show consumption reported at the same number of places as in the preceding month; typhoid-fever at forty-four places more; scarlet-fever at twenty-nine places more; diphtheria at twenty-one places more; measles at four places more, and small-pox at six places more than in the month of September, 1894.

Detroit.—During the month of October Detroit has undergone and is still (November 15th) suffering from one of the most severe epidemics of diphtheria that has ever been experienced in that city. The total for the four weeks ending October 27th shows 87 cases with 20 deaths as compared with

only 37 cases and 11 deaths during the first four weeks of October, 1893. Out of the 87 cases, 50 were reported as still existing at the end of the last week, and while 20 had died, only 17 had recovered. The Board of Health has decided to practise the antitoxine treatment.

MINNESOTA.—Franklin Staples, M.D., President, Winona; C. N. Hewitt, M.D., Secretary, Red Wing.

Minneapolis, 223,700: E. S. Kelley, M.D., Commissioner, reports for September 185 deaths, of which number 61 were under five years of age. The annual death-rate per 1000 was 8.27. From zymotic diseases there were 41 deaths, of which 13 were from typhoid-fever; and from consumption, 24.

MISSISSIPPI.—W. F. Hyer, M.D., President, Meriden; Wirt Johnson, M.D., Secretary, Jackson.

MISSOURI.—F. J. Lutz, M.D., President, St. Louis; William P. King, M.D., Secretary, Kansas City.

The following is the resolution which was unanimously adopted at the recent meeting of the Board:

"No medical college guilty of issuing a catalogue or prospectus in which are contained material misrepresentations concerning its teaching facilities, course of study, or false representations in the list of students matriculated or in attendance, shall be in good standing with this Board."

St. Louis, 541,000: George Homan, M.D., Commissioner of Health.

The Board of Health is much exercised with the *un*sanitary circumstances of the St. Louis Sanitary Company's plant for garbage disposal. It has become a stench to the neighborhood. Thirty days having been given by the Board of Health to abate the odors, they appear at latest report to be unabatable; and the result a legal contest.

Dr. Otto A. Wall, who lives a mile to the southwest of the factory, testified that at that distance he could distinctly notice a smell, and he had no trouble in identifying it as the same smell he had frequently encountered when near the factory. Much other testimony to the same effect was taken.

The defence by several witnesses purports to show that the

unpleasant odors of the rendering works have been exaggerated; and that several of the stinks have a different origin, such as the Gasconade street sewer.

Pollution of the drinking-water continues to be a subject of deep concern by Commissioner Homan. He holds it responsible for the continued prevalence of typhoid-fever, and recommends the appointment of a commission to investigate the matter, and sounds the alarm concerning pollution of city water by Chicago sewage. He also urges other improvements, notably an "out-patient" department for treatment of persons who cannot go to the dispensary; an insane detention board; a removal of the poorhouse to quarantine; and the establishment of a vaccinia laboratory.

Kansas City, 124,000: Mortality report for the month of September, 128—under five years of age, 43. Prevailing causes: from diphtheria and croup, 9; fever, typhoid and typho-malarial, 3; phthisis pulmonalis and tuberculosis, 19. Death-rate, 10.24.

NEBRASKA.—J. V. Beghtol, M.D., President, Friend; F. D. Haldeman, M.D., Secretary, Ord.

Omaha.—The Board of Health is endeavoring to prevent an epidemic of small-pox or other contagious diseases. Tenement-houses, lodging-houses, and cheap hotels are being inspected, and printed rules and regulations concerning sanitation are being posted.

Lincoln.—Diphtheria is prevalent throughout this section of Nebraska, says the *West Point Advertiser*. It has become so widespread in Tekamah that no kind of public gathering is tolerated, and the homes affected by the disease are quarantined. At Wisner the public schools have been closed.

NEVADA.—S. L. Lee, M.D., President, Carson City; J. A. Lewis, M.D., Secretary, Reno.

NEW HAMPSHIRE.—G. P. Conn, M.D., President, Concord; Irving A. Watson, M.D., Secretary, Concord.

NEW JERSEY.—C. F. Brackett, M.D., President, Princeton; Henry Mitchell, M.D., Secretary, Asbury Park.

Hudson County (Jersey City and vicinity), 310,022: Total deaths, 498; under five years of age, 235. Death-rate, 22.9. Deaths from zymotic diseases, exclusive of consumption (40), 114; of which there were from diphtheria, 19; typhoid-fever, 18; diarrhœal diseases, 34.

October 18.—A committee of the Board of Trade sent out circulars to the physicians of the city asking them to furnish information regarding the public health as affected by Passaic water. The questions submitted are as follows:

1. Have you found among your patients during the last six months any sickness caused by Passaic water?

2. How many of your patients have been made sick during the past six months by Passaic water?

3. If sickness was caused by Passaic water during the past six months, has that sickness increased or decreased during the last month?

4. Has sickness, if any, caused by Passaic water shown any increase this year over past years?

5. Is Passaic water in its present condition dangerous?

Physicians are asked to furnish answers to these questions within a week.

Newark, 280,000: Health Officer Lehlbach reports for October: Deaths, 348; death-rate, 20.88. There were 55 cases of diphtheria and croup; 106 cases of scarlet-fever, 21 cases of typhoid-fever, and 12 cases of small-pox, making the total number of infectious diseases reported 194, an increase of 78 over the month of September.

The increase in scarlet-fever is attributed partly to the opening of the schools and the bringing together of children, and in some cases to imperfect disinfecting.

Camden, November 12.—Diphtheria is epidemic in the city, 40 cases and 15 deaths having been reported within two weeks. All of the cases are in one section of the city. This is the most unhealthful part. The physicians are looking for the cause, and are taking the most energetic steps to stamp out the disease.

NEW YORK.—F. O. Donohue, M.D., President, Syracuse; J. S. Barnes, M.D., Secretary, Albany.

The State Board *Bulletin* reports for the month of Septem-

ber 9525 deaths, representing an average daily mortality of 317, against 311 in September, 1893; in August, 335. The death-rate for the State was 17.50 per 1000 population annually, against 19.15 in August; in September last it was estimated at 17.90. In 150 cities and villages, representing three fourths of the population, the death-rate was 18.85, against 19.00 a year ago, and in six large cities it was 19.05; the decrease in mortality has been chiefly in the populous cities. Zymotic diseases caused 2324 deaths, or 24.4 per cent of the total mortality, and the same as in September, 1893, the average for September being 25.0 per cent. Diarrhœal diseases caused 1450 of these deaths, or 15.0 per cent of all deaths (20.0 per cent in August, which was unusually low for that month); the mortality from this cause in the large cities is less than usual. Typhoid-fever showed the same mortality as in the corresponding month of last year, and the usual fall increase is less than the average; its prevalence is not reported from any locality. Scarlet-fever continued the decrease in mortality which began in May, and where prevalent it is of mild type. Diphtheria caused the same number of deaths as in August, the customary fall increase not having yet shown itself. Measles caused but 15 deaths, all in the maritime district save one. There were 8 deaths from smallpox in New York and 1 at Port Jervis; 1 case of the disease is reported from Evans, Erie County. Acute respiratory diseases caused fewer deaths than a year ago. From consumption there were 988 deaths. With an average number of fair days, there was an excess of rainfall for the first time since May, less marked in the central part of the State; the relative humidity was raised, the mean dew-point being about the same as in August. The average temperature was 3° higher than usual and but 3° lower than in August, with a higher maximum than occurred in that month. The average atmospheric pressure was 30.09.

New York, 1,925,562: Total deaths, 3037—1424 under five years. Death-rate, 19.17. Zymotic diseases per 1000 deaths from all causes, 217. Deaths from consumption, 350.

Under the present administration New York bids fair to rival London in illustrations of the advantages of energetic sanitation, even to very thickly populated centres, as com-

pared with more sparsely populated places, or even country districts, where sanitation is neglected. At the time of this writing we have before us the report for the week ending November 10th—601 deaths, an annual death-rate of 15.82. Diphtheria continues to be successfully *treated*, and its prevalence is much abated—142 deaths for the month of September.

Brooklyn, 1,012,200: Total deaths for September, 1738—887 under five years. Death-rate, 21. Zymotic diseases per 1000 deaths from all causes, 248.50. Deaths from consumption, 188.

Deaths from *typhoid-fever* during the month, 21; doubtless, as in New York, due to polluted water.

From *diphtheria* and "croup" the number of deaths for September was 115, and for the latest weekly report before us, ending November 10th, the number of deaths was *forty-six*.

The setting in of cold weather has abated the foul odors emanating from the regions of Newtown Creek and the Bushwick sewage flats in the eastern section of the city, Gowanus Creek in the western, and from manure storage throughout; but the continued and increasing prevalence of diphtheria and its stepping-stone—throat troubles—abundantly demonstrate the fruitfulness of these disease culture-beds at all seasons.

The Citizens' Sanitary League, consisting for the most part of citizens living within a mile or two of these nuisances, held a meeting November 12th, at which it was declared that "the testimony taken on the evening of October 19th brought to the notice of the State Board of Health several interesting facts. First, the agreements made by Mayor Boody's administration with the different factories in reference to moving away from the Creek; secondly, it was shown conclusively that none of them had moved. The Acme Fertilizing Company was one of those that agreed to move; they did move: fire moved them. They have rebuilt their works and are again in operation; that is moving, with a vengeance! It was also shown that the Moeller Manufacturing Company was destroyed by fire on the 28th of last July.

"During the summer a committee was appointed to wait upon Mayor Charles A. Schieren, and to call his attention to

the nuisances we complained of. He said to the committee: 'I will say frankly that I am doing and will do all I can in the matter.'"

Mr. William D. Fox, in reviewing the condition of affairs at the Creek, said that "the only measure thus far that had any effect in abating the existing nuisance was a petition to the Legislature asking the suppression of bone-boiling and fat-rendering establishments within three miles of any city. Governor Flower had ordered the State Board of Health to make an investigation regarding the source of the smells. He believed that the only way to have them abated was by pestering the Governor until he gave the needed relief. He had less than two months more tenure of office, and much depended upon the organization acting promptly. Health Commissioner Emery received a big salary, but did not do his duty, and Mayor Schieren admits that the condition of affairs in Newtown Creek is far from satisfactory."

A committee was appointed to draft suitable resolutions to be presented to Governor Flower, together with the report made by the Executive Committee.

The steam disinfector has been completed in conjunction with the contagious diseases hospital at Flatbush, and it is claimed by the Health Department to be the most complete plant of its kind in the United States. It is an iron box twelve feet long and five feet width and depth, with an outer jacket.

School Hygiene appears to be well provided for by an excellent committee on health, composed of physicians; but under the absurd rules of the Board of Education, it is made the duty of this committee, as of all the rest, to take cognizance of and act upon such subjects as may be brought to its attention by the Board, which thus virtually assumes to know more about everything required without inquiry than any committee that it authorizes to make inquiries! Considering the prevalence of diphtheria and other infectious diseases, at a recent meeting of the Board, the Health Committee recommended the appointment of a sanitary inspector of the schools, and an appropriation of $2000 for salary. But the Board, in virtue of its assumed superior knowledge of any such necessity, declared the proposition preposterous; that it was for the appoint-

ment of a sinecure and a useless expenditure; and unceremoniously rejected it.

A few members of the Board take THE SANITARIAN. Their particular attention is invited to another page reporting the recent action of the School Board of Boston in this regard.

Syracuse, 91,944: Total deaths for September, 125—38 under five years. Death-rate, 16.30. Zymotic diseases per 1000 deaths from all causes, 208. From consumption, 215. Typhoid-fever is reported, in October, to be prevalent; but, as usual, contracted from polluted water—among people who are obliged to depend upon well or cistern-water. Cesspools and vaults are built near the wells, which affords splendid opportunity for contagion. Sewage leaks from the cesspools and finds its way to the wells. In the dry season the wells get low and the people are compelled to use the dregs that have settled to the bottom of the wells.

Albany, 98,000: Total deaths, 148—43 under five years. Death-rate, 18. Zymotic diseases per 1000 deaths from all causes, 120. From consumption, 18.

Buffalo, 300,000: Total deaths, 485—365 under five years. Death-rate, 19.40. Zymotic diseases per 1000 deaths from all causes, 388. From consumption, 39.

Rochester, 150,000: Total deaths, 168—66 under five years. Death-rate, 13.40. Zymotic diseases per 1000 deaths from all causes, 211.75. From consumption, 14.

Water pollution is again the subject of public concern. A recent inspection of the outlying district, about three miles above the head of Hemlock Lake, the source of supply, comprising the village of Springwater, with a population of about 400, discovered privy vaults, pig pens, and piles of manure seeping into the lake. The health officer of Springwater promised the removal of the hogs and manure. The privy vaults, presumably, are to remain.

NORTH CAROLINA.—H. T. Bahnson, M.D., President, Salem; Richard H. Lewis, M.D., Secretary, Raleigh.

From the *Bulletin* of the State Board of Health we find that during September there were 185 deaths in 29 towns, aggregating 147,554 population; 101 were of colored people, and 53 were of children under five years of age.

The annual death-rates were 11.7 per 1000 for the white population, 19.6 for the colored population, and 15 for the total. There were 34 deaths from consumption, 15 from typhoid-fever, 3 from pneumonia, and 21 from diarrhœal diseases.

Asheville, 12,000: Total deaths, 15. Annual death-rate, 15 per 1000.

Charlotte, 14,000: Total deaths, 22. Annual death-rate, 17.6 per 1000.

Raleigh, 15,000: Total deaths, 22. Annual death-rate, 17.6 per 1000.

Wilmington, 22,000: Total deaths, 41. Annual death-rate, 22.4 per 1000.

NORTH DAKOTA.—Hon. W. H. Standish, President, Bismarck; F. H. DeVaux, M.D., Superintendent, Valley City.

OHIO.—Byron Stanton, M.D., President, Cincinnati; C. O. Probst, M.D., Secretary, Columbus.

Cincinnati, 325,000: J. W. Prendergast, M.D., Health Officer, reports for September a mortality of 394, of which 56 were under five years of age, representing an annual death-rate of 14.54 per 1000. There were 82 deaths from zymotic diseases—diphtheria and croup, 21; typhoid-fever, 10; and from consumption, 39.

Cleveland, November 7.—Scarlet-fever is prevailing extensively. During the last week in October 97 cases were reported, with no signs of abatement.

Dayton, October 25.—Typhoid-fever, diphtheria, and scarlet-fever are all prevalent. In the eastern part of the city there are reported an exceedingly large number of cases of diphtheria. In the southern part of the city and in Riverdale there are said to be numerous cases of typhoid-fever, while on the West Side there exists scarlet-fever. The Health Department is reported to be in a crippled condition—without funds. Secretary Lewis, of the Board of Health, admitted that he did not keep a record of contagious diseases sent in by physicians, and therefore could not state the number of cases of diphtheria, typhoid-fever, or scarlet-fever existing in the city.

OKLAHOMA TERRITORY.—L. L. Parker, President, Kingfisher; C. D. Arnold, M.D., Secretary, El Reno.

PENNSYLVANIA.—S. T. Davis, M.D., President, Lancaster; Benjamin Lee, M.D., Secretary, Philadelphia.

The State Board held its twenty-ninth annual meeting at Harrisburg, November 8th. The Secretary presented his annual report. It included a succinct history of the work of the Board during the past year, and a statement of the sanitary problems that are pressing for solution, those most prominent being the protection of water supplies, the suppression of human and bovine tuberculosis, and the possible prevention of diphtheria by the so-called "antitoxine treatment." The report was adopted as the Board's report to the Governor.

The report of the executive officers showed that small-pox does not now exist in the State except at Philadelphia. Typhoid-fever has prevailed at some 17 different points during the past four months. The epidemic at Titusville was traced to the infection of a dairyman's milk supply through a case existing at the dairy farm.

The 22 cases of typhoid-fever among the 55 members of Company F, Ninth Regiment, P. N. G., after leaving camp at Gettysburg, seemed to have been due to the detailing of a soldier, with incipient typhoid-fever, to duty in the mess tent of his company, and the consequent contamination of food and culinary utensils.

Diphtheria, the report continues, has been combated at 13 distinct points, and scarlet-fever at 6 points. There were detailed reports of inspections at 17 places in the State and of minor complaints from 54 localities.

Philadelphia, 1,139,457: M. Veale, Health Officer, reports: In the four weeks ending October 27th there were 1415 deaths, of which number 503 were under five years of age. Annual death-rate, 16.3 per 1000. Deaths from consumption numbered 186; from diphtheria and croup, 146; from typhoid-fever, 25.

The antitoxine treatment has received the earnest attention of the Board for several weeks, and provision for its early introduction is under way, and will be hastened by the increased spread of diphtheria, there having been 160 cases with 54 deaths during the last two weeks in October.

Pittsburg, 272,000: J. Guy McCandless, M.D., Registrar, reports: During the four weeks ending October 27th there were 328 deaths, of which 132 were under five years of age. Deaths from typhoid-fever, 17; diphtheria and croup, 15. Annual death-rate, 15.47.

RHODE ISLAND.—A. G. Sprague, M.D., President, River Point; Gardner T. Swarts, Secretary, Providence.

Providence, November 12.—Some time last spring a petition was sent to the City Council calling attention to a nuisance existing in the swampy region a short distance north of the North Burial Ground, and extending over the city line into Pawtucket. The petitioners state that the nuisance has existed for years, and has been gradually growing more offensive. Much of the sewage, it is stated, is retained north of Cemetery Street by reason of the shallow river water, and is both deleterious to health and detrimental to the real estate interests in that neighborhood.

SOUTH CAROLINA.—J. R. Bratton, M.D., Chairman, Yorkville; H. D. Fraser, M.D., Secretary, Charleston.

Charleston, 82,870 white, 36,295 colored: 65,165: H. B. Horlbeck, M.D., Health Officer, reports for the *week* ending November 3d, deaths, 32—9 whites, 23 colored. Death-rates, respectively, 16.20, 32.95: 25.53.

SOUTH DAKOTA.—C. B. Alford, M.D., President, Huron.

TENNESSEE.—J. D. Plunkett, M.D., President, Nashville; J. Berrien Lindsley, M.D., Secretary, Nashville.

The principal diseases, named by the *Bulletin* in the order of their greater prevalence, in the State for the month of September, were typhoid-fever, malarial-fever, dysentery, consumption, diphtheria, whooping-cough, lung diseases, acute; scarlet-fever, cerebro-spinal meningitis, rheumatism, and chicken-pox.

Chattanooga, 40,000: Total deaths, 32—colored, 15. Annual death-rates per 1000, white, 7.55; colored, 13.84: total, 9.60.

Knoxville, 40,385: Total deaths, 53—colored, 18. Annual death-rates per 1000, white, 13.43; colored, 23.70: 15.74.

Memphis, 57,951 : Total deaths, 106—colored, 61. Annual death-rates per 1000, white, 18.67 ; colored, 28.62 : 21.95.

Nashville, 87,754 : Total deaths, 130—colored, 68. Annual death-rates per 1000, white, 13.62 ; colored, 24.60 : 17.77.

TEXAS.—R. M. Swearingen, M.D., State Health Officer Austin.

UTAH TERRITORY.

Salt Lake City, October 15.—W. T. Dalby, M.D., assumed office as Health Commissioner, in place of T. B. Beatty, M.D. Dr. Dalby is reputed to be a competent man, well versed in sanitary science, and if he but pursues the plans mapped out by his predecessor and receives the support of the citizens, he will not only succeed in still further decreasing the annual death-rate, but will find comparatively easy sailing, a condition made possible by Dr. Beatty's intelligent, persistent efforts. In a published interview with Dr. Beatty, he recalled the condition of 1891, before he was appointed, when there were 1109 deaths against 727 last year, while for the current year, if the ratio of the last several months is maintained, the deaths will number not over 500, which, computing the population at 50,000, is an annual death-rate of 10 per 1000, without doubt the lowest in the United States. But Salt Lake should not be content with comparisons with other cities. The natural conditions locally for healthfulness are such that if furthered by the best sanitary methods our city should far excel any other place in the land for the boon of longevity and health. Therein should lie Salt Lake's greatest reputation and claim to eminence.

VERMONT.—C. S. Caverly, M.D., President, Rutland ; J. H. Hamilton, M.D., Secretary, Ritchford.

VIRGINIA.—R. W. Martin, M.D., President, Chatham ; A. Irving, M.D., Secretary, Richmond.

WASHINGTON.—J. R. Hathaway, M.D., President, Everett ; G. S. Armstrong, M.D., Secretary, Olympia.

Tacoma.—The Board of Health met in the Mayor's office in the City Hall yesterday afternoon and organized. It was the first meeting. The Board of Health comprises the Mayor, the Chief of Police, the President of the City Council, the City Physician, and the Health Officer. All were present. Mayor Orr is *ex-officio* chairman, and his secretary, Ben Brush, was made Secretary of the Board.

The Board considered the question of adulterated and impure milk. A complaint against such milk was formally made. The City Physician and Health Officer were instructed to investigate.

WEST VIRGINIA.—W. P. Ewing, M.D., President, Charleston; N. D. Baker, Secretary, Martinsburg.

WISCONSIN.—Solon Marks, M.D., President, Milwaukee; U. O. B. Wingate, M.D., Secretary, Milwaukee.

Milwaukee, 270,000: W. Kempster, M.D., Commissioner, reports for September a mortality of 377, of which 205 were under five years of age.

Cases of infectious diseases reported: Diphtheria, 40; scarlet-fever, 7; small-pox, 172; typhoid-fever, 23: 242. Admitted to City Isolation Hospital, 108.

Deaths from diphtheria and croup, 30; typhoid-fever, 12; diarrhœal diseases, 103; consumption, 15.

Antitoxine.—A number of Milwaukee physicians have been working for some months to secure the establishment of a laboratory in Milwaukee similar to the laboratories in operation in New York and in Chicago.

PROVINCIAL BOARD OF HEALTH OF NEW BRUNSWICK.—William Bayard, M.D., Chairman, St. John; George E. Coulthard, M.D., Secretary, Fredericton.

PROVINCIAL BOARD OF HEALTH OF NOVA SCOTIA.—Hon. W. S. Fielding, Premier and Provincial Secretary, Chairman; A. P. Reid, M.D., Secretary, Halifax.

PROVINCIAL BOARD OF HEALTH OF ONTARIO.—John Duff Macdonald, M.D., Chairman, Hamilton; Peter H. Bryce, M.D., Secretary, Toronto.

PROVINCIAL BOARD OF HEALTH OF QUEBEC.—E. P. Lachapelle, M.D., President, Montreal; Elzear Pelletier, M.D., Secretary, Montreal.

Montreal.—Typhoid-fever is becoming somewhat pronounced in certain districts of the province. Take, for example, West Farnham, where 23 cases have been reported during the past week, and Jerome Township, which shows the development of 7 cases—attributed to the common causes, polluted water and milk.

At a meeting of the Board, October 25th, a by-law was passed, that: "No municipal corporation shall proceed to the execution of any drainage works which will have the effect of throwing sewage into water courses, rivers, lakes, or other sources of water supply before having submitted the plans of such drainage to the Board of Health of the province, and having obtained its approval."

MANITOBA.—John H. O'Donnell, M.D., Chairman, Winnipeg; C. J. Jamison, M.D., Secretary, Winnipeg.

Winnipeg, October 10.—The prevalence of diphtheria, fevers, and other diseases in this city is due, in a large extent, to the filth that has been allowed to accumulate, through the inaction of the health authorities, in the alleys, on the premises of citizens, and particularly in the sewers.

Concerning the epidemic of typhoid, which is gaining ground in the city, about 150 cases have been investigated in the last two months. There may be a great many cases which have never been reported to the Health Department, as the law was loosely worded in this regard. The causes for the disease may be divided into three heads: 1. Water, the general cause. 2. Milk; under the system pursued it would be very easy to detect the signs of a milk epidemic. This outbreak is not attributed to impure milk. 3. Sewer gas; defective sewers may occasionally be the means of propagating the disease, but are not an important factor in its spread.

One well, to which 17 cases of typhoid were attributed, has been closed for the present. The fact of possible danger from drinking-water should lead every one to use no water for drinking purposes which has not been boiled. Care should be taken to secure the milk supply from licensed milkmen.

SUPERIOR BOARD OF HEALTH OF MEXICO. — Eduardo Dicéaga, President, Mexico; José Ramirez, M.D., Secretary-General, Mexico.

BUENOS AYRES, 580,371 : Albert B. Martinez, Director-General of Municipal Statistics.

MORTALITY STATISTICS ABROAD FOR THE THIRD QUARTER.

Population, total number of deaths, annual death-rates, deaths from small-pox and cholera :

London, 4,349,166 ; 17,240 ; 15.9 ; 43. Glasgow, 677,883 ; 2745 ; 16.2. Manchester, 520,211 ; 2440 ; 18.8 ; 5. Liverpool, 507,230 ; 3068 ; 24.2 ; 3. Birmingham, 492,301 ; 1854 ; 15.1 ; 20. Leeds, 388,761 ; 1579 ; 16.2 ; 1. Dublin, 349,594 ; 1815 ; 20.8 ; 17. Sheffield, 333,922 ; 1485 ; 17.8. Edinburgh, 265,672 ; 993 ; 15.0 ; 10. Belfast, 265,123 ; 1334 ; 20.1. Bristol, 226,578 ; 749 ; 13.2. Bradford, 223,985 ; 844 ; 14.4 ; 1. Nottingham, 223,584 ; 848 ; 15.2. Hull, 212,679 ; 777 ; 14.6. Salford, 205,828 ; 1013 ; 19.7. Newcastle, 201,-947 ; 843 ; 16.7. Portsmouth, 170,973 ; 608 ; 14.2. Norwich, 105,645 ; 399 ; 15.1. Amsterdam, 446,295 ; 1744 ; 15.6 ; 2 ; 35. Rotterdam, 228,579 ; 947 ; 16.6 ; 16 ; 7. The Hague, 174,790 ; 677 ; 15.4. Paris, 2,424,705 ; 10,810 ; 17.8 ; 9. Lyons, 438,077 ; 1981 ; 18.1 ; 0 ; 1. St. Étienne, 133,443 ; 663 ; 19.8. Havre, 116,369 ; 993 ; 34.1 ; 2. Rouen, 111,847 ; 820 ; 29.3 ; 13 ; 14. Rheims, 105,408 ; 797 ; 30.2. Nice, 97,720 ; 381 ; 15.6. Nancy, 87,875 ; 440 ; 20.0. Amiens, 83,977 ; 485 ; 23.1. Grenoble, 60,698 ; 303 ; 20.0. Besançon, 54,636 ; 237 ; 17.4 ; 1. Berlin, 1,767,639 ; 8858 ; 20.0. Hamburg, 594,209 ; 2892 ; 19.5. Leipzig, 401,251 ; 2364 ; 23.6. Munich, 390,000 ; 2356 ; 24.2. Breslau, 360,660 ; 2541 ; 28.2 ; 0 ; 1. Dresden, 316,660 ; 1749 ; 22.0. Cologne, 311,957 ; 2119 ; 27.1. Magdeburg, 232,846 ; 1452 ; 24.9. Frankfort, 198,238 ; 811 ; 16.3. Hanover, 180,692 ; 990 ; 21.9. Königsberg, 169,-202 ; 1236 ; 29.2. Nuremberg, 162,442 ; 856 ; 21.1. Chemnitz, 159,117 ; 1020 ; 25.6. Altona, 155,393 ; 694 ; 17.8. Düsseldorf, 154,488 ; 983 ; 25.4. Elberfeld, 137,853 ; 501 ; 14.5. Stuttgart, 133,338 ; 542 ; 16.3. Strasburg, 131,753 ; 763 ; 23.1. Stettin, 128,186 ; 1111 ; 34.7. Dantzig, 124,305 ; 842 ;

27.1. Barmen, 119,928 ; 521 ; 17.4. Crefeld, 116,220 ; 524 ; 18.0. Halle, 115,319 ; 751 ; 26.0. Aix-la-Chapelle, 109,021 ; 658 ; 24.1. Essen, 88,481 ; 446 ; 20.2. Anvers, 247,440 ; 1139 ; 18.4. Liège, 158,892 ; 782 ; 19.7. Berne, 47,620 ; 210 ; 17.6 ; 1. Basle, 75,114 ; 312 ; 16.6 ; 1. Geneva, 78,777 ; 311 ; 15.8. Lausanne, 35,623 ; 129 ; 14.5. Zurich, 103,271 ; 432 ; 16.7. Chaux-de-fonds, 27,511 ; 106 ; 15.4. Vienna, 1,465,537 ; 7441 ; 20.3. Buda-Pesth, 552,769 ; 3184 ; 23.0 ; 30. Prague, 339,172 ; 1586 ; 18.7. Trieste, 159,739 ; 1101 ; 27.6 ; 1. Lemberg, 132,722 ; 1085 ; 32.7 ; 1. Gratz, 116,475 ; 623 ; 21.4. Brünn, 97,411 ; 586 ; 24.1. Cracow, 78,183 ; 728 ; 37.2 ; 0 ; 86. Presburg, 57,634 ; 423 ; 29.4. Linz, 49,475 ; 297 ; 24.0. Copenhagen, 341,000 ; 1411 ; 16.6 ; 1. Stockholm, 252,927 ; 1051 ; 16.6. Gothenburg, 109,000 ; 362 ; 12.9. Christiania, 161,154 ; 831 ; 20.6. St. Petersburg, 954,400 ; 9007 ; 37.7 ; 17 ; 2449. Moscow, 753,469 ; 6976 ; 37.0 ; 11. Warsaw, 500,931 ; 4285 ; 34.2 ; 26 ; 479. Odessa, 324,500 ; 2111 ; 26.0 ; 5. Naples, 522,658 ; 3207 ; 24.5 ; 1. Turin, 335,111 ; 1156 ; 13.8. Lisbon, 242,297 ; 2079 ; 34.3 ; 26 ; 1. Bucharest, 206,000 ; 1397 ; 27.1 ; 1. Cairo, 353,188 ; 4949 ; 56.0 ; 1. Alexandria, 181,703 ; 2148 ; 47.3 ; 2. Damietta, 43,502 ; 334 ; 30.7. Suez and Ismailia, 12,406 ; 151 ; 48.5. Port Saïd, 10,693 ; 160 ; 59.8.

Reports incomplete : Bordeaux, 240,582 ; 1213 ; 20.2. Lille, 200,325 ; 1091 ; 21.8 ; 1. Roubaix, 115,390 ; 526 ; 18.2 ; 1. Limoges, 72,697 ; 453 ; 24.9 ; 7. St. Quentin, 47,837 ; 252 ; 21.1. Milan, 432,360 ; 2634 ; 24.4 ; 86. Genoa, 204,177 ; 1144 ; 22.4 ; 7. Florence, 188,907 ; 982 ; 20.8. Venice, 160,406 ; 749 ; 11.8. Bologne, 141,297 ; 762 ; 21.6. Livourne, 103,560 ; 424 ; 16.4. Alexandria, 74,675 ; 349 ; 18 7. Brescia, 66,745 ; 422 ; 25.3 ; 3 Parma, 50,574 ; 271 ; 21.4. Jassy, 80,428 ; 504 ; 24.9 ; 1. Algiers, 75,432 ; 536 ; 28.4 ; 5. Buenos Ayres, 527,164 ; 3100 ; 23.5. Bombay, 821,764 ; 7200 ; 35.0 ; 294 ; 103. Calcutta, 466,460 ; 3407 ; 29.2 ; 209 ; 375. Madras, 452,518 ; 3511 ; 31.0 ; 8 ; 2.

NEW BOOKS AND BOOK REVIEWS.

ANY BOOK reviewed or advertised in THE SANITARIAN costing $1.50 or less will be sent *free* to any present subscriber sending the name of a new subscriber, or to any new subscriber on receipt of the full subscription price sent on his own account; or any book so reviewed or advertised costing more than $1.50 will be sent at a discount of that amount.

MANUAL OF THE UNIVERSAL MEDICAL SCIENCES. Edited by CHARLES E. SAJOUS, M.D. Seventy Associate Editors. Illustrated with Chromo-Lithographs, Engravings, and Maps. In Five Volumes. 1894. Price, the five volumes and *Universal Medical Journal*, monthly, $15. Philadelphia, New York and Chicago: The F. A. Davis Company, Publishers; London: F. J. Rebman. Cloth, 8vo, about 500 pages each volume.

For physicians who read but one periodical devoted to medicine—if there are any such—this should be *the* one; and for all others, no matter how many they read, if they would know the gist of medical progress in all its departments, they should have this *annual* anyhow. Besides the excerpt made by an accomplished corps of over two hundred editorial correspondents, in addition to the seventy associate editors, there are special essays on diseases of the urinary organs, by Professor Lépine, of Lyons; on fever, by Professors Wilson and Eshner, of Philadelphia; on affections of the brain, by Drs. Pritchard and Shultz, of New York; on diseases of the spinal cord, by Professor Obersteiner, of Vienna; on diseases of the uterus and adnexia, by Professor Montgomery, of Philadelphia; on diseases of the eye, by Dr. Oliver, of Philadelphia; on general therapeutics, by MM. Dujardin-Beaumetz and Dubief, of Paris; on syphilis, by Professors White and Furness, of Philadelphia. In short, the work is an encyclopædic summary of the year's progress in the medical sciences, comprising all that is most useful under the scrutiny of thoroughly competent observers and investigators, and so arranged as to afford the utmost facility to those who have occasion to refer to it.

Looking for results, under the prefatorial suggestion with regard to the "slight modification in the proof-reading," we

discover the alleged "chief attribute of an ocean atmosphere is its clearness," which, on reference to the source of the extract, should be *cleanness.* But as a whole, so far as we have been able to discover, the volumes are unusually free from typographical errors and bear evidence of careful proof-reading.

TEXT-BOOK OF HYGIENE: A COMPREHENSIVE TREATISE ON THE PRINCIPLES AND PRACTICE OF PREVENTIVE MEDICINE FROM AN AMERICAN STANDPOINT. By GEORGE H. ROHÉ, M.D., Professor of Therapeutics, Hygiene, and Mental Diseases in the College of Physicians and Surgeons, Baltimore, Md.; Superintendent of the Maryland Hospital for the Insane; Member of the American Public Health Association; Foreign Associate of the Société Française d'Hygiène, etc. *Third Edition.* Thoroughly Revised and Largely Rewritten, with many Illustrations and Valuable Tables. Royal octavo, 553 pp., cloth, $3 net. Philadelphia: The F. A. Davis Company, Publishers, 1914 and 1916 Cherry Street.

The third edition of this work since it first appeared in 1885 attests the estimation in which it is held as a text-book for students of medicine and practical sanitation. Meanwhile the author has continued to avail himself of excellent opportunities to keep himself abreast with the progress of preventive medicine, and has thoroughly revised all that portion of the work mainly under his own purview—domestic, institutional, and public hygiene—as college professor, hospital superintendent, and for a time health commissioner; and for the rest, has brought to his aid two of the most distinguished sanitarians in public service, Medical Director A. L. Gihon, of the Navy, and Surgeon-General Walter Wyman, of the Marine Hospital Service, with the result of producing the best book on practical sanitation hitherto published in America.

SEWAGE DISPOSAL. By WYNKOOP KIERSTED, C.E. 12mo, cloth, $1.25. New York: John Wiley & Sons. Table of Contents: Sewerage and Sewage; Vital Process of Purification; Disposal by Dilution; Disposal of Sewage by Irrigation; Disposal of Sewage by Intermittent Filtration; Purification of Sewage by Chemical Precipitation; General Discussion.

This is an unusually terse and yet comprehensive epitome of a larger subject. It discusses the principles embraced in the prevailing methods of sewage disposal generally, but particularly favors and advocates the purification and utilization of sewage as the preferred method, which is the main purpose of the book, and for which it is commendable to all who would understand the advantages of the favored method.

EDWARDS' HYGIENE, with Anatomy and Physiology, being an Amplification of Edwards' Catechism of Hygiene. By JOSEPH E. EDWARDS, A.M., M.D., ex-Member of the State Board of Health of Pennsylvania; Member of the American Public Health Association; Foreign Associate Member of the French Society of Hygiene; Fellow of the College of Physicians of Philadelphia; Member of Philadelphia County Medical Society; Editor of *The Annals of Hygiene*, etc. Intended for Schools and General Readers. 12mo, pp. 435. Profusely Illustrated. Philadelphia: Edward P. Slevin.

This book opens with a chapter on "General Considerations," deduced inferentially from the author's interpretation of the conditions of health designed by the Creator. "He placed it not only within the reach of all, but so easily accessible, as typified by the planting of the tree of life in the *midst* of Paradise, that it could be missed only by their wilful obstinacy. . . . He made Adam and Eve familiar with the laws of nature, and He placed the fruit of the tree of life and health within easy reach. At the same time He placed within their power the tree of knowledge, leaving to their own free will whether to eat of the fruit which, as they thought, would give them a knowledge superior to that of natural law; but He warned them that if they chose the fruit they would thereby bring upon themselves disease and premature death." But it *didn't*. Physical death was not the penalty. Nevertheless the author goes on to say: "I wish to be understood, in the beginning, as enunciating the fundamental doctrine that nature is opposed to disease; that disease is the result of unnatural conditions of living; and that while no single individual can be held responsible for the existence of diseased conditions, yet disease exists because humanity as a whole has seen fit to depart from the natural methods of life laid

down for it by the Creator, just as Adam saw fit to disregard the injunctions of the Creator." One of the characteristics of the book is a list of questions for review at the end of every chapter, and among them, at the end of the first, is: "Why is it fair to assume that, in His designs of creation, God provided for health and not for disease?" and other questions suggested by the text, like inconsistent with a correct knowledge of organic bodies and the natural history of disease. The logic of this introductory chapter is that if our first parents had not partaken of the forbidden fruit they would have lived forever, and this world would have been their eternal abiding-place—that heaven is the reward of their disobedience.

With such a beginning, one is not disappointed in expecting to find other objectionable features, among them some hideous pictures much more likely to deter than to attract students. In short, the objectionable features of this book overwhelm all there is of good in it.

PRACTICAL URANALYSIS AND URINARY DIAGNOSIS: A MANUAL FOR THE USE OF PHYSICIANS, SURGEONS, AND STUDENTS. By CHARLES W. PURDY, M.D., Queen's University; Fellow of the Royal College of Physicians and Surgeons, Kingston; Professor of Urology and Urinary Diagnosis at the Chicago Post-Graduate Medical School. Author of "Bright's Disease and Allied Affections of the Kidneys;" also of "Diabetes: its Causes, Symptoms, and Treatment." With Numerous Illustrations, including Photo-Engravings and Colored Plates. In one crown octavo volume, 360 pp., in extra cloth, $2.50 net. Philadelphia: The F. A. Davis Company, Publishers, 1914 and 1916 Cherry Street.

Some such work as this is necessary to every physician and to every medical student who would become competent for the practice of his profession; and by no means the least valuable portion is an appendix on urinary examinations for life insurance. Altogether it is the fullest and the best practical work on uranalysis and urinary diagnosis that has hitherto fallen under our notice.

A SYNOPSIS OF THE PRACTICE OF MEDICINE FOR PRACTITIONERS AND STUDENTS. By WILLIAM BLAIR STEWART,

A.M., M.D., Lecturer on Therapeutics; late Instructor on Practice of Medicine in the Medico-Chirurgical College of Philadelphia; Demonstrator in the Philadelphia School of Anatomy, etc. Large 12mo, pp. 434, cloth, $2.75. New York: E. B. Treat, Publisher, 5 Cooper Union.

This work comprises several years' experience by the author as instructor in the practice of medicine. It is not intended to replace more elaborate publications, but to give to the busy practitioner and student, at a small cost, concise and accurate descriptions which will suggest outlines and practical thoughts upon etiology, symptomology, pathology, diagnosis, prognosis, and treatment.

The author has evidently used the best material from reliable sources, with the result of producing a comprehensive epitome of all that is essential. Many drugs and methods have been but briefly considered, not on account of their inutility, but from the fact that better forms of treatment have taken their place. The work is alike commendable to both physicians and students.

PROCEEDINGS OF THE FOURTH ANNUAL MEETING OF THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES, held at Washington, D. C., May 1st-3d, 1894. 8vo, pp. 792. Illustrated. E. Chancellor, M.D., Secretary, St. Louis, Mo. Extra copies will be furnished by the secretary at $4. This volume is far superior in all respects to any other that has ever been published by the Association. It is admirably printed on excellent paper, beautifully illustrated with numerous photo-engravings, electrotypes, and diagrams, and strongly bound: well merited by the character of the contents, by no means limited to the purview of the surgeons and persons interested in military medicine, but of value to all medical practitioners and sanitarians.

THE SENILE HEART: its Symptoms, Sequelæ, and Treatment. By GEORGE WILLIAM BALFOUR, M.D. (St. Aud.), LL.D. (ED.), F.R.C.P.E., F.R.S.E.; Consulting Physician to the Royal Infirmary, to the Royal Hospital for Sick Children, and to the Royal Public Dispensary, Edinburgh; Consulting Physician to Leith Hospital, etc. 12mo, pp. 300.

Illustrated. Price, $1.50. New York and London: Macmillan & Co.

A book of much practical utility to all physicians, for there are none who have not occasion for the particular distinctions which it describes. Without such knowledge as it inculcates it is not possible to accurately diagnose and treat affections of the heart common to people after middle age; and no book with which we are acquainted so lucidly describes these conditions as this one.

THE GOSPEL OF BUDDHA, According to Old Records, told by PAUL CARUS. Price, $1.50. Chicago: The Open Court Publishing Company.

A useful book to all who are curious to know how little Buddhism resembles Christianity and how superficial and pretentious the tenets of its gospel.

CONTEMPORARY LITERATURE.

EXERCISE OF A PHYSICAL CHARACTER, and also intellectual occupations, contribute to give variety to life and promote longevity, though one should be careful not to indulge in excesses in either line of recreation. Commonly received opinions are to the effect that centenarians have few pleasures. Sarah White, a widow, who died at one hundred and one, at Pershore, is reported by Dr. Smith, in his letter to Professor Humphry, to have danced and sung on her one hundred and first birthday anniversary. Her digestion and appetite were good; and it saddens the social philosopher to think that if Sarah had not indulged in this terpsichorean revelry she might have lived many years longer. She was an early riser, like almost all centenarians, drank beer occasionally (that probably was the cause of the dancing), but did not smoke nor take snuff.—*From "Prolonging Life," by William Kenner, North American Review for November.*

THE PEOPLE'S KITCHENS IN VIENNA must be ranked among the most successful philanthropic undertakings of this century. They are a striking proof of the splendid results which may be attained by individual efforts. . . . In the

course of the day more than twenty thousand persons on the average are now provided with food in the people's kitchens. And these are far from forming the whole *clientèle* of the associations. In Vienna, as elsewhere, there are people who cannot afford even a five-kreutzer dinner. There are others too feeble to go to a restaurant; others, again, who object to eating in public. Special arrangements are made for the benefit of such as these. At certain hours of the day the kitchens are open for the sale of food to those who wish to take it away with them. People who have invalids in their houses can procure for them in this way suitable nutriment at a small cost. And women with large families may fetch a quart of soup, a milk pudding, or whatever else they can afford, and, safe from curious glances, divide it among their children at their own fireside. . . . So far as the food supply is concerned, the kitchens are entirely self-supporting.—*From the "People's Kitchens in Vienna," by Edith Sellars, Nineteenth Century for November.*

ALCOHOL AND HAPPINESS.—The body uses its powers in resisting the outside forces which act upon it. Normally, there is a balance between body and environment. If environment prevails we are discouraged; if we are able to prevail, our spirits rise and our happiness grows. And it is not for the moment only, but we compare the accumulated impressions of the powers outside of us with the powers which our brains develop, and are happy or unhappy according as we feel our superiority or otherwise. Just how much does alcohol interfere in this balance of powers? It clearly cannot lessen the power of outside influences which harm us; it can as clearly not increase our own powers in so far as they enter into this conflict with the outside world—it rather makes us less skilful and able. What can it do, then? It can deceive us. It dulls our appreciation of powers outside of us until they seem so much smaller that we are sure we can conquer them, and so we gain a feeling of satisfaction. Nine tenths of those who take strong drink seek this feeling in alcohol. This is their "refreshing" at eventide, their "rest from the day's cares," their forgetfulness of sorrows; but it rests upon a deceit, and at the least trial falls into ruin. He who to-day forgets is not any stronger to-morrow, and so is constantly

tempted to a new appeal to his false friend until his senses are so dulled that every duty is forgotten. His holiest interests are but shadows and mist before his eyes, and he knows nothing more but thirst for the deceitful drink. Even the defenders of alcohol at last call a halt; but they have forgotten that the first steps are much more easily undone than the later ones, when the brain has in a measure lost its power to control. They do not forget through malice, but because they have not rightly understood the physiological effect of alcohol. —*Dr. Justus Gaule, in the Popular Science Monthly for November.*

WHY THE HORSE HAS SUCCEEDED IN ARABIA.—The success of the horse in Arabia shows how devoted must have been the care which has been given to its nurture. Fitting, as the creature does, exactly to the needs of nomadic people engaged in almost constant warfare, the creature has naturally been a far more important helper to the wild folk of the desert lands about the eastern Mediterranean and the Red Sea than to any other race. In those lands he fell into the keeping of a very able folk. The contrast between the care devoted to the animals by them and that which our Indians give to their ponies is a fair measure of the difference in the ability of these very diverse races.—*From "The Horse," by Professor N. S. Shaler, in the November Scribner.*

DR. HOLMES' THOROUGHNESS.—As an editor, I am enraged by nothing so much, or with so good cause, as by notes, sometimes from near and intimate correspondents, who say they have "dashed off something" which they have sent to me without revision; or who say that the thing "would have been better" if they had kept it by them? Pray, why did they not keep it by them? Who asked them to dash it off and to send it to us without revision? Has the public no rights, and has the editor no rights? I obtrude this observation here for the sake of saying to young people that they must not be deceived by the apparent ease and freshness, and, if you please, slap-dash of Dr. Holmes' lighter papers, or by the absolute fluency with which his verses run. He never insulted anybody by sending slap-dash work to the press, and

that is one reason—as I believe Horace said before me—why you and I always like to read what he did send to the press. Nobody knows what good things he has left out, and nobody ever read anything of his for which he had not done the best he could do before he submitted it for publication. He had a great advantage in that he was hardly ever an editor. In that freedom, he was not summoned to write at a moment's notice, and he was not compelled to print work with which he was not satisfied. On the other hand, if a duty was to be done, he did it. If a ballad was to be written for the Old South Meeting-House, he wrote it. But he took his time for writing it, and he did not say it was finished before it was finished. That is the reason why his work will stand.—*From a character sketch of Oliver Wendell Holmes, by Edward Everett Hale, in the November Review of Reviews.*

CHINESE STREET-PAVING.—The street-paving in Canton was of loose granite slabs laid crosswise, about nine inches broad and six inches through, and as long as the street was wide. Although presenting a somewhat irregular surface, the face of each slab was generally worn smooth by the treading of unshod feet. A drain ran down the centre of each street, under the granite slabs, into which, between the joints, percolated rain-water, fluid refuse, and house-slops. These liquids ran out into the main tidal canals which intersected the city, and when they did not run, as was not infrequent, the slabs were raised, and the drains cleaned out.—*Florence O'Driscoll, M.P., in the Century for November.*

"MICROBE-KILLERS" and germicides should be avoided unless advised by a properly qualified person. Carbolic acid is not another name for magic, and its effect is often inferior to that of hot water; under no circumstances can it take the place of that liquid.—*From "The Influence of Heat and Cold on Microbes," by Lawrence Irwell, in the New Science Review for October.*

PAMPHLETS, REPORTS, ETC., RECEIVED.

Electrical Treatment of Fibroid Tumors. G. Betton Massey, M.D., Philadelphia.

Gold in Therapy. E. A. Wood, M.D., Syracuse, N. Y.

Gynæcological Operations outside of Hospitals, Maintenance of an Aseptic Technique in. Hunter Robb, M.D., Baltimore, Md.

Gynæcology, Certain Erroneous Principles and Methods in. G. Betton Massey, M.D., Philadelphia.

"Healing, Destructive Art of." Lydia Jane Pierson. Samuel French, 151 Nassau Street, New York.

Hypospadia. F. C. Schaffer, M.D., Chicago.

Insane, New Laws for the Care of. Carlos F. MacDonald, M.D., New York.

Report of Friends' Asylum for. Philadelphia.

Report of Managers. State Asylum, Utica, N. Y.

Report of Managers. St. Lawrence State Hospital, Ogdensburg, N. Y.

Intestinal Statics. J. H. Kellogg, M.D., Battle Creek, Mich.

Index Outfits. Library Bureau, 146 Franklin Street, Boston, Mass.

Laparotomy, Critique of Microscopic Examination of Specimens. F. Byron Robinson, M.D., Chicago.

Leprosy, National Control of. Walter Wyman, M.D., Surgeon-General United States Marine Hospital Service, Washington.

Longevity, with a List of Persons known to have Lived One Hundred Years or More. Archer Atkinson, M.D., Baltimore, Md.

Life and Healing—A Segment of Spiritonomy. Homer W. Merton, Boston, Mass.

Medical Opinion on the Attitude of the New York State Commission in Lunacy. Abstract of various publications. E. D. Ferguson, M.D., Troy, N. Y.

Malignancy, Cause and Cure of. William Thornton, Boston, Mass.

Morphine Disease, Modern Treatment of. J. B. Mattison, Brooklyn, N. Y.

Morphinism. *Ibid.*

Massage in Gynæcology. Oscar J. Mayer, M.D., San Francisco, Cal.

Natatorio-Sanatorium Institute. Waco, Tex.

Non Nocere. A. Jacobi, M.D., New York.

Ovarian Disease, Non-Surgical Treatment of. J H. Kellogg, M.D., Battle Creek, Mich.

Ophthalmia Neonatorum. L. Webster Fox, M.D., Philadelphia, Pa.

Occlusion of the Post-Nasal Space by Syphilitic Adhesion. E. H. Griffin, M.D., New York.

Œsophageal Stethoscope, with Remarks on Intra-Thoracic Ausculation. S. Solis-Cohen, M.D., Philadelphia.

Phrenology, the Value of. Fowler & Wells Co., New York.

Physical Culture in Pulmonary Disease. C. F. McGahan, M.D., Aiken, S. C.

Phthisis Pulmonalis, Prevention of. E. L. Shurly, M.D., Detroit, Mich.

Public Health in Civilization, Fundamental Conditions of. George Homan, M.D., St. Louis, Mo.

Practical Plumbing, Report of Commissioners. Baltimore, Md.

Prostatitis, Electricity in the Treatment of. G. Betton Massey, M.D., Philadelphia.

Rectum, Four Years' Work in Diseases of. Charles B. Kelsey, M.D., New York.

Rectal and Gastro-Intestinal Surgery. H. O. Walker, M.D., Detroit, Mich.

Retinitis Albuminuria. L. Webster Fox, Philadelphia.

Sanitation, Achievements of, Measured by Vital Statistics. George E. Willitts, Lansing, Mich.

Sewer Air, The Production of Diseases by. A. Jacobi, M.D., New York.

Sanitation of Dwellings, Public Buildings, and Thoroughfares. J. H. Davison, M.D., Los Angeles, Cal.

Subvolution, A New Pterygium Operation. Boerne Bettman, M.D., Chicago.

Spermine, The Value of. Dr. G. Krieger, Chicago.

Tait's Perineal Flap Operation. F. Byron Robinson, M.D., Chicago.

Stomatitis Neurotica Chronica. A. Jacobi, M.D., New York.

Temperature Regulation. Johnson Electric Service Co., Equitable Building, Boston, Mass.

Treatment of Syphilis. Henry H. Morton, M.D., Brooklyn, N. Y.

Treatment of Typhoid-Fever. Elmer Lee, M.D., Chicago.

Typhoid-Fever, Can it be Aborted? J. E. Woodbridge, M.D., Youngstown, O.

Throat and Lung Hospital Report. Brooklyn, N. Y.

Tuberculosis, Restriction of. J. H. Davison, M.D., Los Angeles, Cal.

Throat Conditions Observed in Gouty Subjects. S. Solis-Cohen, Philadelphia.

Talipes Varo-Equinus. J. H. Huntley, Alger, O.

Tuberculosis: Its Prevalence, Communicability, and Prevention. Irving A. Watson, M.D., Concord, N. H.

Tuberculosis, Prevention of. C. O. Probst, M.D., Columbus, O.

Yellow-Fever: Its Relation to Climate and to Hygienic Measures in the United States. J. C. Le Hardy, M.D., Savannah, Ga.

SANITARY PATENTS OF RECENT DATE.

Temperature Regulator. T. O. Perry, Chicago, Ill. 528,645. A device for regulating theatres, sanitariums, and the like, or the ventilation of apartments, to cool them, etc.

Temperature Regulator. T. O. Perry, Chicago, Ill. 528,736. A device for automatically controlling the temperature of apartments heated by any usual artificial means.

Temperature Regulator. T. O. Perry, Chicago, Ill. 528,799. Additional improvements on the same, 528,800, 528,801.

Process and Apparatus for Destroying Noxious Gases. R. H. Pond. 528,718.

Filter and Method of Cleaning Same. W. A. Freise, Newark, N. J. 528,630. The flow of water can be reversed, causing same to flow from top to bottom instead of from bottom to top.

Filtering Apparatus. J. A. Bowden, Detroit, Mich.

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inal Section in Dropsy; Intestinal Stasis; The Relation of Recent Bacteriological Studies to the Etiology of Typhoid-Fever; A New Dynamometer for Use in Anthropometry, Shortening the Round Ligaments *vs.* Ventral Fixation for Retroversion: pamphlets (Kellogg), 86; Landmarks in Gynæcology (Robinson), 467; Les Eaux D'Alimentation (Guinochet), 181; Lunacy Commission Report, 277; *Littell's Living Age*, 287, 478; Manual of Universal Medical Sciences (Sajous), 561; Medical Microscopy (Reeves), 382; Nature of the State (Carus), 274; *New Science Review*, 279; *North American Review*, 479; One Hundred Years of Business Life (Schieffelin), 384; Pain (Corning), 182; Practical Urinalysis (Purdy), 564; Publications Received, 96, 479, 570; *Review of Reviews*, 94; School Population of United States, 278; Senile Heart (Balfour), 565; Synopsis of the Practice of Medicine (Stewart), 564; Small Hospitals (Worcester and Atkinson), 274; Smithsonian Institution Reports, 83; *St. Louis Clinique*, 189; State Reformatory, 469; Transactions of the New Hampshire Medical Society, 277; Transactions of the Medical and Chirurgical Faculty of Maryland, 384; Water Cures and Climatic Treatment (Linn), 276; Sewage Disposal (Kiersted), 562; Text Book of Hygiene (Rohé), 562.

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